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1.3 ATA PO_2 N_2-O_2 DECOMPRESSION TABLE VALIDATION

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19. ABSTRACT:

Results of a successful human validation trial of 1.3 atmosphere (ATA) PO_2-in-nitrogen (PO_2-in-N_2) decompression profiles for use with the MK 16 MOD 1 Underwater Breathing Apparatus (UBA) are presented. Twelve (12) dive profiles involving repetitive dives, decompression dives, and repetitive decompression dives ranging in depth from 80 to 190 feet of seawater (fsw) were tested a total of 325 times. Three cases of decompression sickness occurred in the first portion of the trial, when schedules computed assuming that the diver breathes 1.3 ATA PO_2-in-N_2 at depths greater than 33 fsw were tested. Schedules tested in the last portion of the trial were calculated under the assumption that the diver breathes 1.25 ATA PO_2-in-N_2 at depths deeper than 33 fsw. No additional cases of DCS occurred with these schedules. Diver inspired PO_2 was measured and used to estimate the risk of central nervous system (CNS) toxicity for 199 of the dives. Decompression tables for use with the MK 16 MOD 1 with air diluent are presented, with recommendations to reduce risk of oxygen toxicity.

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INTRODUCTION

The MK 16 MOD 0 Underwater Breathing Apparatus (UBA) is the workhorse UBA for U.S. Navy Explosive Ordnance Disposal (EOD). The MK 16 MOD 0 delivers a constant 0.7 atmosphere absolute oxygen partial pressure (0.7 ATA PO_2) to the diver with either nitrogen (N_2) or helium (He) as the inert gas. Decompression tables for MK 16 MOD 0 diving have been in use for over a decade and can be found in the current U.S. Navy Diving Manual[1]. There is now an effort to increase the bottom times and repetitive dive capability with a MK 16 MOD 1 that will deliver a breathing gas with a PO_2 of 1.3 ATA to the diver. The present study is part of the developmental effort for this new MK 16 when used with air as the diluent gas.

Tables for the MK 16 MOD 0 with constant 0.7 ATA PO_2 in N_2 were computed using the EL-MK 15/16 RTA (Real Time decompression Algorithm) with the VVAL18 MPTT (Maximum Permissible Tissue Tension) Table [2], herein referred to as the EL-MK 15/16 VVAL18 RTA. The EL-MK 15/16 VVAL18 RTA was minimally modified at the Navy Experimental Diving Unit (NEDU) and used to compute 1.3 PO_2-in-N_2 decompression tables. These tables offer longer bottom times with decreased decompression times for EOD divers. In 1998 NEDU conducted a series of no-decompression dives that validated the 1.3 ATA PO_2-in-N_2 tables in the 60-100 feet of sea water (fsw) range[3]. The purpose of this study was to validate the modified EL-MK 15/16 VVAL18 RTA for use in MK 16 MOD 1 N_2-O_2 decompression and repetitive dives.

METHODS

GENERAL

The study was reviewed and approved by the NEDU Committee for the Protection of Human Subjects (CPHS) before any manned trials commenced. The study involved approximately 80 U.S. Navy military divers. All the divers read and signed a consent form prior to the study. They were required to meet the usual physical qualifications criteria for diving. All divers were trained on the standard and emergency NEDU diving procedures before participating in the study. In this report, the personnel acting as experimental divers will be called "divers."

To minimize the potential for having results of a dive profile confounded by effects of a preceding dive profile, the divers were required to spend a minimum of 60 hours at sea-level between profiles. If a diver did not experience any symptoms of decompression sickness (DCS) for 48 hours after completing an experimental dive profile, he was given the diagnosis of "no DCS" and could participate in test of another profile after elapse of an additional 12 hr. If a diver was diagnosed with a Type I DCS injury, he could not participate in any study during the ensuing week. Further diver

participation in the study after a Type II DCS injury was handled on a case-by-case basis.

No systemic drugs except antibiotics and approved decongestants were allowed unless cleared by the Diving Medical Officer (DMO). Since many divers normally take nonsteroidal anti-inflammatory drugs (NSAIDs) or vitamins daily, such use was allowed if 1) the DMO was notified and 2) no more than the diver's routine amount was taken while participating in the dive.

In U.S. Navy dive decompression research programs, experimental divers have traditionally been instructed to abstain from alcohol for a minimum of 72 hours before and after participating in an experimental dive. However, this does not reflect operational diving practice. In an effort to make the experimental diver population a more accurate reflection of operational divers, the divers were allowed to engage in their usual social drinking behavior. Alcohol consumption was documented in the pre-dive medical screening. In this way there was no incentive for the divers to be less than completely forthright about their alcohol consumption. Divers were also instructed to engage in their regular program of physical training, although they were encouraged to participate in only light physical training on the day of their experimental dive. This was another effort to make the experimental divers reflect operational divers more closely.

Selected no-decompression repetitive dive and decompression dive profiles at depths from 80 to 190 fsw were tested in present work. The test profiles were calculated using the EL-MK 15/16 VVAL18 RTA in simulated real-time mode with a 2 sec update period. The EL-MK 15/16 VVAL18 RTA was modified to assume that inspired O_2 partial pressures were breathed in accord with those provided during idealized operation of the MK 16 MOD 1 UBA with air as the diluent gas. The diver was assumed to breathe a 0.7 ATA PO_2 gas mixture starting with descent from surface and continuing until arrival at 33 fsw, whereupon the inspired PO_2 was assumed to be 1.3 ATA for the remainder of the descent, time on the bottom, and subsequent ascent to 10 fsw. The inspired PO_2 was then assumed to be 0.7 ATA for the remaining ascent from 10 fsw to surface, after which the diver was assumed to breathe air. An ascent rate of 30 fsw/min was assumed for all calculations. In addition, the 10 fsw decompression stop was eliminated on ascent, since operating characteristics of the MK 16 MOD 1 UBA preclude a decompression stop with a PO_2 of 1.3 ATA at depths shallower than 20 fsw. Some schedules computed under the assumption that the diver breathes 1.25 ATA PO_2 instead of 1.3 ATA PO_2 at the deeper depths were also tested (See Results).

The target compression rate in the test dives was 60 fsw/min, but the rates actually achieved ranged from 38 to 60 fsw/min. Although the EL-MK 15/16 VVAL18 RTA algorithm was not exercised in its real-time mode to govern the minute-by-minute schedules of the dives, provision was made to use schedules that accounted for these inevitable variations in descent rates between different dives. A collection of schedules was pre-calculated with different descent rates in 5 fsw/min increments and made available at dive start time. The pre-calculated schedule with a descent rate closest to the average rate actually achieved was used for the dive.

Twelve (12) dive profiles were tested in the following categories of interest to EOD:

- No-decompression dives to 80 and 100 fsw with two repetitive dives
- Decompression dives to 90, 110, and 130 fsw with one no-decompression repetitive dive
- Decompression dives with one repetitive decompression dive to 120, 140, and 160 fsw
- Single decompression dives to 130, 160, 170, and 190 fsw

Three to four divers participated in each dive. Each diver had a tender to assist him with dressing for the dive, entering the chamber, supporting him during the surface interval between dives, and assisting him after the dive. The tenders were not exposed to a hyperbaric environment.

The divers were interviewed each morning by a Diving Medical Officer and the Dive Watch Supervisor (DWS) to verify their fitness to dive. Divers were kept on-site for 2 hr after surfacing from each dive. Each diver was queried about status on surfacing and at 2 hr, 24 hr and 48 hr after surfacing, and could volunteer information about symptoms at at any time. Treatment of any decompression sickness was per standard U.S. Navy Standard Recompression Treatment Tables.

Divers wore a neoprene wet suit with booties, farmer johns, and weight belts as needed. A hot water hose was available for use if a diver became cold during a decompression stop or a surface interval.

The water level in the OSF wet pot was set at approximately 5 fsw from the deck gratings. Because each diver was either at rest or working in the horns of his assigned bicycle ergometer, the water depth at the horns determined the diver's actual mid-chest depth. This water depth was measured on each dive day and was invariably from 0.8 to 1.0 fsw. All depths reported here are for diver mid-chest depth, corrected for immersion.

REJECTION RULES

The purpose of the present validation study was to demonstrate that the incidence of DCS when diving schedules prescribed by the modified EL-MK 15/16 VVAL18 RTA is not higher than that normally accepted in U.S. Navy diving. Profile rejection criteria were established before commencing the man-dives in order to allow a statistical conclusion to be reached that a profile was of unacceptably high risk with a minimum number of man-exposures. Any profile was to be rejected, and further testing of that profile was to be ceased, if three or more cases of definite DCS occurred in the first 16 dives on the profile, or if 6 or more cases occurred in the 32 dive maximum number of exposures arbitrarily set for any given profile. These criteria provided for rejection of any given profile with 95% binomial confidence that the true DCS risk of the profile exceeded 5%.

Occurrence of two significant DCS Type II cases or one serious case (life threatening, paralysis, etc.), as agreed upon by the Principal Investigator and the NEDU Medical Department Division Officer, were additional predetermined causes for rejection of a profile.

The above rejection rules limited the overall risks to which the experimental divers were exposed, but also determined the probability that a schedule of given true DCS risk would be rejected as unacceptably risky. This probability was estimated for schedules of various true DCS risks using a Monte Carlo simulation of 50,000 trials at each true DCS risk to generate the power curve for the trial shown in Figure 1. Each value on the ordinate in the figure gives the estimated probability of rejecting a schedule of true DCS probability on the abscissa. Thus, the probabilities of rejecting schedules of 10 and 20% true DCS risk were 23 and 76%, respectively, under the present rejection rules. This relatively low power is a consequence of the low number of test exposures per schedule allowed in the trial, which was driven by desire to test more rather than fewer different schedules within the limits of the program.

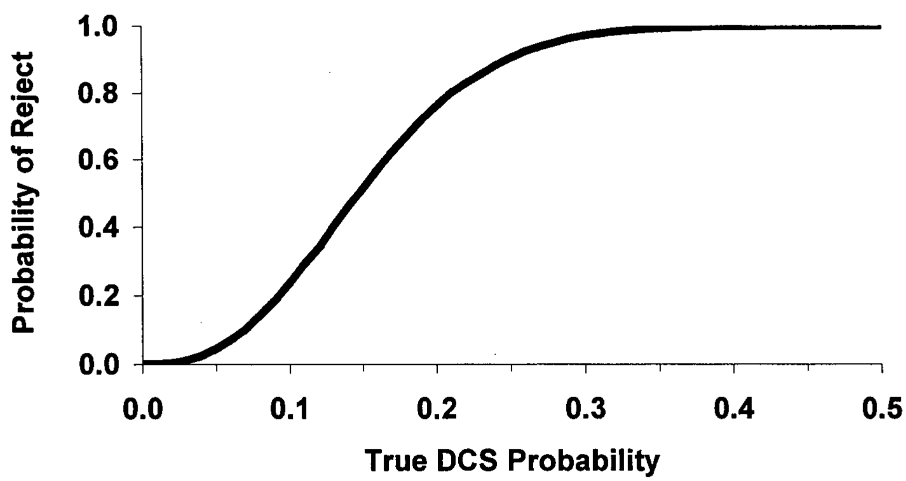

Figure 1. Estimated power curve for the present validation trial from Monte Carlo simulations of 50,000 trials at each true DCS risk. Each trial consisted of a maximum of 32 exposures taken four at a time.

EXPERIMENTAL PROFILES

The dive profiles tested in this study are outlined in Tables 1 through 4. The tabulated profiles are those computed using 60 and 30 fsw/min descent and ascent rates, respectively, and a PO_2 of 1.3 ATA at depth as described above. As per usual convention, each bottom time includes descent time. Decompression stop times do not include preceding ascent time. Decompression stop times varied from those in the table by 1 or 2 minutes if different descent rates within the trial range of 38-60 fsw/min, or a PO_2 of 1.25 ATA at depth, was used. See Appendix A for a discussion of other issues considered in selection of these dive profiles.

Table 1. No-Decompression Dive With Two No-Decompression Repetitive Dives

Series	Depth (fsw)	Bottom Time (min)	Decompression Stops (fsw) Stop Times (min)				
			50	40	30	20	10
30 FSW							
	30	30	none				
	Surface Interval, 30 min						
	30	30	none				
	Surface Interval, 30 min						
	30	30	none				
100 FSW							
	100	20	none				
	Surface Interval, 30 min						
	100	15	none				
	Surface Interval, 30 min						
	100	14	none				

Table 2. No-Decompression Dive With One No-Decompression Repetitive Dive

Series	Depth (fsw)	Bottom Time (min)	Decompression Stops (fsw) Stop Times (min)				
			50	40	30	20	10
90 FSW							
	90	30	none				
	Surface Interval, 30 min						
	90	27	none				
110 FSW							
	110	20	none				
	Surface Interval, 30 min						
	110	15	none				
130 FSW							
	130	15	none				
	Surface Interval, 30 min						
	130	11	none				

Table 3. Decompression Dive With One Repetitve Decompression Dive

Series	Depth (fsw)	Bottom Time (min)	Decompression Stops (fsw) Stop Times (min)				
			50	40	30	20	10
120 FSW							
	120	30				4	
	Surface Interval, 30 min						
	120	30				26	
140 FSW							
	140	25				8	
	Surface Interval, 30 min						
	140	25			3	28	
160 FSW							
	160	25				18	
	Surface Interval, 30 min						
	160	25			13	28	

Table 4. Decompression Dive

Series	Depth (fsw)	Bottom Time (min)	Decompression Stops (fsw) Stop Times (min)				
			50	40	30	20	10
130 FSW							
	130	30				10	
160 FSW							
	160	30			2	24	
170 FSW							
	170	30		2	5	25	
190 FSW							
	190	25	1	4	4	23	

DIVE PROCEDURES

All diving was conducted in the wet chamber of the NEDU OSF. The water temperature was 78-84°F (26-30°C) for all dives. Four pedal ergometers (W. E. Collins,

Braintree, MA) were staged in a swimming inclination on the platform. The control room monitored all diving via the in-chamber video cameras. A hydrophone in the wet pot, and a Full Face Mask (FFM) rigged with a communication system, were used to communicate with the divers.

Preparation and Compression

All dives were performed with the divers breathing on MK 16 MOD 1 UBAs with air as the diluent gas. The divers donned their UBAs in front of Alpha Chamber with the assistance of tenders and under the supervision of the Diving Watch Supervisor (DWS). When directed by DWS, the dressed divers entered Alpha Chamber of the OSF and proceeded directly to the trunk. Each diver then connected his/her gas sampling line to the UBA inhalation hose where it exits the body of the rig, entered the water, and remained on the surface breathing air. After all of the divers had completed this procedure and were ready to dive, the DWS instructed them to "go on gas," meaning start breathing from the UBA, and prepare to descend. One to three minutes after the divers went "on gas," the OSF complex was pressed with air to the desired depth. The divers gave OKs throughout the entire descent. If there was a halt for a squeeze, the chamber was brought up a few feet, and the affected diver was allowed to clear. The DWS then continued to press the chamber to the desired bottom depth. Upon arrival at the bottom depth, the average descent rate achieved was calculated and used to select the decompression schedule for the dive. The divers were instructed to add diluent if the secondary display showed a partial pressure of oxygen greater than 1.6 ATA at any time during the dive, or whenever they felt need for a larger tidal volume.

At Depth

Upon arriving at the bottom, all divers proceeded to their assigned bike. All bikes were situated in such a fashion that they were in full view of the video monitors. After giving OKs, the divers began exercising between 35 and 50 watts. The divers alternated between equal periods of exercise and rest in the horns of the bike while at depth (typically 5 minutes of exercise was alternated with 5 minutes of rest).

Decompression

During the first 33-35 dives in the study (Appendix B) divers were allowed to manually add O_2 to their rigs at their own discretion at any point in the dive. However, during the deeper dives, diver exercise of this perogative resulted in unacceptably high PO_2 values in many divers' breathing gases, so the divers were thereafter instructed not to add O_2 manually until ascent had started. Decompression was at a rate as close to 30 fsw/min as possible. Divers were instructed to remain at rest during decompression and to ensure that the rig maintained a PO_2 of 1.3 ATA.

At Surface

Data was collected in a text file format and imported into several Microsoft Excel 97 spreadsheets. The data was reduced, analyzed, and output generated through Microsoft Excel spreadsheets.

Instrumentation

The depth, time at depth, and diver inspired PO_2 were monitored on every dive. This was done initially to ensure that the rigs truly were delivering the intended PO_2 of 1.3 ATA to the divers. Diver inspired gas was sampled at a rate of 125 ml/minute from the base of the MK 16 MOD 1 inhalation hose. For the first half of the study, the gas was analyzed with a Rosemount New Gas Analyzer 2000 (La Haba, CA). The gas sampling system used during this phase of the study had a variable delay time during ascent and descent. For the second half of the study, the gas sampling system was modified to ensure a constant sample delay time throughout each dive, and mass spectrometers were used to analyze the gas (see Appendix D).

RESULTS

Twelve (12) dive profiles were tested a total of 325 times in this study. Three cases of decompression sickness occurred, yielding an overall DCS incidence of less than 1%. Appendices C and D provide a detailed listing and discussion of all dives performed and their outcomes.

Dive profile results are summarized in Table 5 ("SI" is surface interval). Upper 95% binomial confidence limits for the true DCS risks of the individual profiles and for the overall trial outcome are included in the table. These values illustrate that although no profile was rejected for having manifested unacceptable DCS risk in this trial, the ability to assess how low the true DCS risks of the profiles might be is limited by the low number of exposures on each profile. On the other hand, and subject to certain caveats, the overall trial outcome may be viewed as more conclusive. Here, the occurrence of only three DCS cases in 325 exposures allows assertion at 95% confidence that the overall DCS risk of the profiles is less than 2.7%. The validity of this assertion is subject to the assumptions that all exposures were independent and that the true DCS risks of all the profiles are equal; both of which are certainly violated in this data. Nevertheless, the 2.7% figure compares favorably with the estimated risks of current U.S. Navy Standard Air Decompression schedules, which vary widely from fractions of one percent to greater than 10% under the probabilistic models available to make such estimates[4,5,6]. Within these schedules, the mean DCS risk of air dives to the no-stop limits is 2.2% and 2.1% under the BVM(3) and USN93 models, respectively[7]. Thus, the present overall DCS incidence falls well within the range of DCS risks accepted under current U.S. Navy Standard Air diving practice.

Table 5. Summary of Test Results

Dive Profile	# DIVES	#CASES DCS	Upper 95% binomial confidence limit of true DCS risk, %
80/30 SI30 80/30 SI30 80/31	28	0	10.1
100/20 SI30 100/15 SI30 100/14	29	0	9.8
90/30 SI30 90/30	28	0	10.1
110/20 SI30 110/15	32	0	8.9
130/15 SI30 130/11	28	0	10.1
120/30 SI30 120/30	31	1	16.7
140/25 SI30 140/25	30	0	9.5
160/25 SI30 160/25	28	2	23.5
130/30	30	0	9.5
160/30	28	0	10.1
170/30	29	0	9.8
190/25	4	0	52.7
TOTAL	325	3	2.7

Because three cases of DCS were observed during the repetitive decompression dive profiles, the decompression tables were recomputed after dive #80 assuming that the diver was breathing a PO_2 of 1.25 ATA during periods when the inspired PO_2 was previously assumed to be 1.3 ATA. This minor recalculation added 2 to 3 minutes of decompression time to the recomputed profiles. The subsequent dives were performed without incident.

The three DCS cases that occurred in this study were associated with repetitive decompression dives undertaken near the end of the study. The first case was Type I DCS that occurred after a 160 fsw repetitive decompression dive. The diver experienced skin mottling of the left upper arm approximately 3.5 hours after the dive. His symptoms resolved rapidly with a USN TT5. The second case was also Type I DCS that occurred after a 120 fsw repetitive decompression dive. It began with a rash on his abdomen about 4 hours after the dive. Approximately 12 hours after the dive, he developed left shoulder pain. He was treated with a USN TT6 with full resolution of symptoms. The final case was a Type II DCS injury that occurred during a 160 fsw repetitive decompression dive. It started out as pain and numbness in the left hand at 20 fsw, which worsened on the surface. The diver was treated with a USN TT6 with full resolution of symptoms.

DISCUSSION

Three cases of decompression sickness occurred in the 325 dive profiles completed in this study, yielding an overall DCS incidence of less than 1%. This DCS incidence was no higher than the DCS risks thought to be associated with normal U.S. Navy diving operations. However, each of the DCS cases that occurred was associated with a repetitive decompression dive. Failure to reject the repetitive recompression dive schedules as unacceptably risky is of limited significance, due to the low power of the trial for any particular schedule tested. We therefore have reservations about the ability of the EL-MK 15/16 VVAL18 RTA to prescribe adequate decompressions in real-time mode for MK 16 MOD 1 N_2-O_2 repetititve decompression dives.

The repetitive decompression dives were predicted to have the highest risks of DCS by the BVM(3)[6,8], JAP98-2[7], and USN93[9] probabilistic decompression models, and these were the dives on which the observed cases of DCS occurred. Mass spectrometric analysis of diver inspired gas revealed that the MK 16 MOD 1 UBA often failed to provide a PO_2 of 1.3 ATA during ascent from bottom and during the first minute or two at the first decompression stop of these dives. However, the decompression schedules were calculated under the assumption that the divers breathed 1.3 ATA of oxygen during the entire decompression. The failure of this assumed condition to prevail during decompression may have contributed to the occurrence of DCS on these dives. Schedules for these decompressions were recalculated under the assumption that the divers breathed a PO_2 of 1.25 ATA at depth. This resulted in slightly longer decompression stops for the UBA to respond to the PO_2 fall during first ascent and restore the intended 1.3 ATA inspired PO_2. With only mimimal increases in decompression time, no additional cases of decompression sickness occurred.

In addition to the periods of decreased PO_2 during ascent and after arriving at their first decompression stop, divers were also observed to have elevated inspired PO_2 levels during descent and after arriving at the bottom, particularly on the deeper dives. These PO_2 overshoots during compression, which are relieved by diver metabolic consumption of O_2 after arrival at depth, are known features of closed circuit UBA performance[10] that have important implications for O_2 toxicity risk[11,12]. Assessment of these implications became an important objective of this work.

The system initially used to analyze diver inspired gas delivered gas from the diver to the gas analyzer at a rate that varied with chamber pressure. As a result, the delay time between measured pressure and diver inspired O_2 fraction (FO_2) varied widely, causing computed inspired PO_2 values during dives in the initial part of the study to be inaccurate. This problem motivated refinement of the gas sampling system to deliver sample gas at a constant rate with minimal variation in delay time during the dive. Additionally, the FO_2 in the sample gas was analyzed with a mass spectrometer to decrease analytic response time. This improved system was in place during the last 199 dives (66 profiles) tested in this study, and results were used to estimate the risks

of CNS oxygen toxicity (See Appendix E). No symptoms of oxygen toxicity were observed in any of the divers who participated in this study.

Oxygen toxicity is not thought to be a significant problem at descent rates less than 60 fpm, at depths less than 150 or 160 fsw, as long as the diver does not add pure oxygen during descent or while on bottom. Diver addition of O_2 during the latter periods of any dive can result in substantially elevated inspired PO_2 levels. For example, Diver #63 on Dive #73 had the highest estimated risk of CNS oxygen toxicity, 1.6%, of all divers appropriately monitored in this study. This diver repeatedly added oxygen to the UBA while on the bottom, which caused his inspired PO_2 to remain at relatively high levels during this period. The PO_2 profile for this diver is shown in Figure 2. It is clear that PO_2 levels while at 160 fsw remained in excess of the 1.3 ATA PO_2 setpoint of the MK 16 MOD 1, so the rig did not assume PO_2 control until well after decompression had commenced.

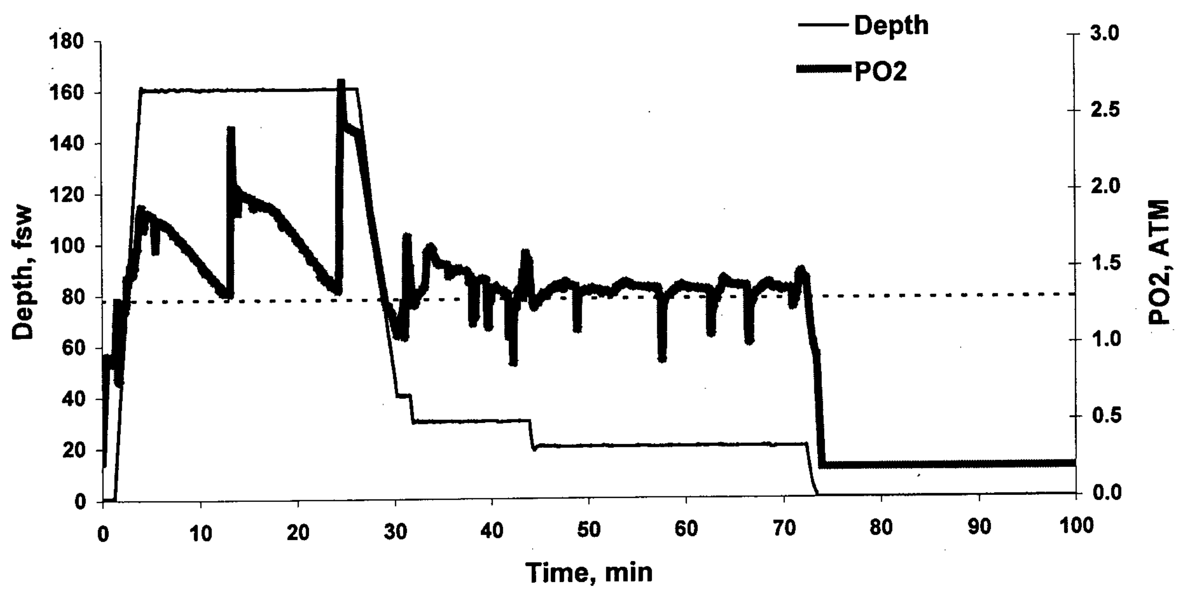

Figure 2. Measured mid-chest depth and inspired PO_2 for Diver #63 during Dive #73. Dotted horizontal line indicates MK 16 MOD 1 1.3 ATA PO_2 setpoint at depths greater than 33 fsw.

Figure 3 shows similar information for another diver on the same dive. This diver did not manually add O_2 during descent or while on bottom and exhibited an inspired PO_2 profile more typical of those seen during the course of the study. Note that this profile exhibits the PO_2 overshoot during and after descent that is typical of MK 16 MOD 1 UBA performance. However, unlike Diver #63, this diver breathed the initial PO_2 overshoot down to the MK 16 MOD 1 PO_2 setpoint within about 5 min of reaching 160 fsw, whereupon the rig resumed automatic regulation of PO_2 as evident in the PO_2 undulations throughout the remainder of the dive. The magnitude of these undulations

illustrates the rig PO_2 control bandwidth. It is clear from these results that divers should be admonished from manually adding O_2 to the MK 16 MOD 1 at all times during descent and while on bottom.

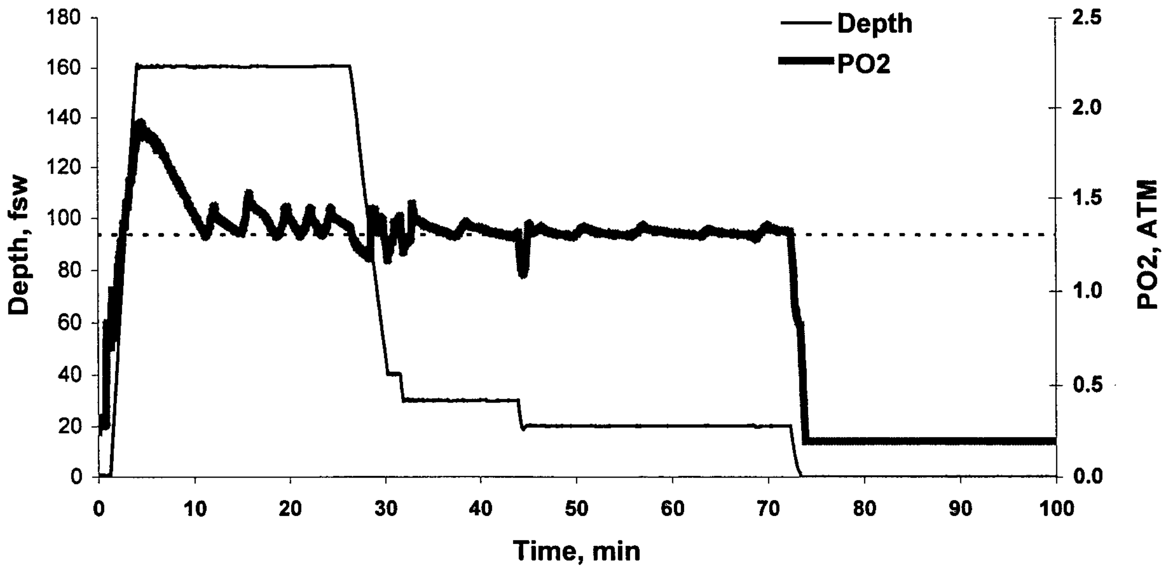

Figure 3. Measured mid-chest depth and inspired PO_2 for another diver accompanying Diver #63 during Dive #73. Dotted horizontal line indicates the MK 16 MOD 1 1.3 ATA PO_2 setpoint at depths greater than 33 fsw.

It should be emphasized that due to the UBA-induced variations in diver inspired PO_2 that occurred during the course of each dive in this trial, schedules were not tested as they were computed. Instead, the schedules were tested under conditions produced when dived with the MK 16 MOD 1 UBA. Therefore, successful results of this trial are applicable only to the schedules when dived with the MK 16 MOD 1. If the MK 16 UBA is engineered to provide tighter control of diver inspired PO_2, and particularly if PO_2 overshoots during and after descent are ameliorated or eliminated, the suitability of these schedules for use with the new UBA will require re-evaluation.

A complete set of decompression tables for planning single and repetitive MK16 MOD 1 dives with air as the diluent gas is provided in Appendix G. As discussed in the introduction to these tables in Appendix F, these tables prescribe decompressions that are at least as conservative as those obtained when the EL-MK 15/16 VVAL18 RTA is used in its real-time mode. For example, the 160 fsw/25 min repetitive decompression dive in Table 3 was tested with 41 minutes of decompression time. The schedules in Appendix G prescribe 21 minutes more decompression time for this dive. Thus, present failure to reject schedules prescribed by the algorithm exercised in its real-time mode as unsafe constitutes failure to reject the corresponding schedules in the tables as unsafe. This inherent conservatism of the tables will also compensate for potential inadequacies

in decompressions for MK 16 MOD 1 N_2-O_2 repetitive decompression dives that the EL-MK 15/16 VVAL18 RTA prescribes in real-time mode.

CONCLUSION AND RECOMMENDATIONS

1. The twelve dive profiles generated by the modified EL-MK 15/16 VVAL18 RTA algorithm and tested 325 times in the present study resulted in only three cases of DCS, which we deem acceptable. We recommend approval of the decompression tables in Appendix G for use with the MK 16 MOD 1 UBA using air as the diluent gas for dive profiles in the 60-190 fsw range that include as many as two repetitive dives. An unacceptable incidence of DCS during operational use of any particular dive profile prescribed by these tables may motivate further study.

2. The work of breathing and risks of nitrogen narcosis, CO_2 retention, and oxygen toxicity[12] are increased during MK 16 MOD 1 N_2-O_2 dives to depths greather than 150 fsw. We therefore recommend that MK16 MOD 1 N_2-O_2 dives to depths greater than 150 fsw be made only after approval by the on-scene commander in consideration of these factors. Limit lines for dives to these greater depths are placed in the MK 16 MOD 1 N_2-O_2 Decompression Tables in accord with this latter recommendation.

3. These tables have been validated on dives in which the descent rate was less than 60 fpm. We recommend that divers using these tables descend at rates no faster than 60 fpm.

4. The MK 16 MOD 1 UBA primary display should indicate a transition from 0.7 to 1.3 ATA at 33 fsw. The diver should verify this transition by monitoring his secondary display. If there is no indication of this transition with continued descent past 40 fsw, the dive should be aborted.

5. The diver should not add oxygen on descent or at any time while on the bottom due to the increased risk of oxygen toxicity that such practice engenders.

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APPENDIX A

ISSUES CONSIDERED IN SELECTION OF TEST PROFILES

Explosive Ordnance Disposal (EOD) requested that the Navy Experimental Diving Unit (NEDU) modify the EL-MK 15/16 VVAL18 RTA previously used to generate tables for divers breathing constant 0.7 ATA PO_2 in N_2 to create new tables for divers breathing 1.3 ATA PO_2 in N_2 on the MK 16 MOD 1 UBA. This was accomplished by 1) recalculating the tables with the assumption that the diver breathed 0.7 ATA PO_2 at shallower depths and 1.3 PO_2 ATA at deeper depths, and 2) modifying the VVAL18 maximum permissible tissue tension table so that the shallowest decompression stop is at 20 fsw. This model was chosen for this study because it is relatively simple and can be incorporated into a diver-worn real-time dive computer. The dive profile bottom times, surface intervals, and depths were selected for their relevance to actual EOD diving operations. The estimated DCS risks for these studies vary with the decompression model used to make the estimates. The DCS risks predicted by the Duke Gas and Bubble Dynamics model [BVM(3)][1,2], the NMRI JAP98 model 2 (JAP98-2)[3], and the USN93[4,5] model for the tested profiles are listed in Table 1.

Table 1. Estimated DCS Risks of Tested Profiles

Profile (Depth/Bottom Time, "SI" is surface interval)	BVM3 % Risk, (±95% C.L.)	JAP98-2 % Risk, (±95% C.L.)	USN93 % Risk, (±95% C.L.)
80/30 SI30 80/30 SI30 80/31	1.2 (0.9 - 1.6)	3.2 (2.1 - 4.5)	2.1 (1.4 - 3.0)
100/20 SI30 100/15 SI30 100/14	0.8 (0.5 - 1.2)	2.8 (2.0 - 3.7)	2.1 (1.1 - 3.7)
90/30 SI30 90/30	1.1 (0.7 -1.6)	2.6 (1.8 - 3.6)	1.9 (1.2 - 2.8)
110/20 SI30 110/15	1.0 (0.6 - 1.4)	2.3 (1.6 - 3.0)	1.9 (1.0 - 3.1)
130/15 SI30 130/11	1.0 (0.6 - 1.5)	2.2 (1.6 - 3.0)	2.0 (1.0 - 3.6)
120/30 SI30 120/30	3.1 (2.4 - 3.9)	4.4 (3.3 - 5.7)	2.5 (1.9 - 3.2)
140/25 SI30 140/25	3.5 (2.8 - 4.4)	4.7 (3.5 - 6.0)	2.6 (2.0 - 3.3)
160/25 SI30 160/25	4.8 (3.9 - 6.0)	5.9 (4.5 - 7.6)	3.2 (2.5 - 4.0)
130/30	2.3 (1.6 - 3.2)	2.3 (1.7 - 3.1)	1.6 (1.1 - 2.1)
160/30	3.8 (2.7 - 5.1)	3.1 (2.2 - 4.1)	1.8 (1.3 - 2.3)
170/30	4.3 (3.0 - 5.9)	3.3 (2.4 - 4.4)	1.8 (1.3 - 2.3)
190/25	4.3 (2.9 - 6.0)	2.7 (1.9 - 3.8)	1.4 (1.0 - 1.8)

Evidence indicates that the water temperature has a minimal effect on the occurrence of DCS, although a trend toward higher DCS incidences has been noted in divers wearing hot water suits and performing stressful dives[6]. Warm water may increase the uptake of gas into tissues, and may increase the risk of DCS. Therefore, evaluation of the profiles in warm water may allow a more rigorous test of the tables than in cold water. Since EOD may be operating in warm water, this could avoid the additional risk of DCS incurred by the potentially less stressful (from a DCS stand point) cold water testing. None of the DCS models used in this work directly consider temperature as a factor governing DCS incidence.

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APPENDIX B

DIVES PERFORMED

This appendix provides detailed tabular information about each of the dives completed in this study. In the table entry headers, DIVE PROFILE and DATE are self-explanatory. DIVE # is the chronological sequence number of all dives performed. DIVER # is the unique identification code of each experimental diver that participated in this study. ON GAS is the local time when the diver put on the face mask and commenced breathing the rig gas mixture. LS (Leave Surface) is the local time when the OSF complex was pressed. RB (Reach Bottom) is the local time when the divers reached the planned depth, and LB (Leave Bottom) is the local time when they left that depth. 50 FSW, 40 FSW, 30 FSW and 20 FSW are the decompression stop depths. Entries under these headings give the local time of arrival and resumption of ascent from the respective stop. RS (Reach Surface) is the local time when the divers reached the surface. OFF GAS is the local time when the diver removed his/her face mask and commenced breathing surface air after the dive.

Measurement of depth, time at depth, and diver inspired gas partial pressures was attempted during every dive in this trial. SYSTEM refers to whether the New Gas Analyzer (NGA) or mass spectrometers (MS) were used to analyze the diver's inspired gas. The maximum, minimum, average, and standard deviation of the partial pressure of the oxygen that was sampled from the base of the diver's inhalation hose while at the bottom are listed below. The values vary widely for many reasons, including the fact that the exact time when the OSF arrived or left the bottom was not always exactly clear, because the depth could vary by one or two tenths of a foot. In addition, the divers occasionally manually added oxygen on descent, or while on the bottom, with a subsequent rise in the PO_2 of the breathing gas. "N/A" indicates that a table entry is not applicable. It appears frequently in the data below because many dives were aborted due to various diver difficulties, or because instrumentation problems precluded acquisition of the information.

DIVES PERFORMED

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	AVE	STDEV
80/80/80	3-Feb	1	14	957	959	1001	1029		1035	1035	NGA	1.69	1.23	1.37	0.07
80/80/80	3-Feb	1	26	957	959	1001	1029		1035	1035	NGA	1.65	1.27	1.43	0.10
80/80/80	3-Feb	1	52	957	959	1001	1029		1035	1035	NGA	1.78	1.28	1.40	0.08
80/80/80	3-Feb	1	44	957	959	1001	1029		1035	1035	NGA	1.72	1.26	1.39	0.06
80/80/80	3-Feb	1	14	1105	1105	1108	1135		1139	1139	NGA	2.10	1.29	1.40	0.11
80/80/80	3-Feb	1	26	1105	1105	1108	1135		1139	1139	NGA	1.53	1.27	1.37	0.04
80/80/80	3-Feb	1	52	1105	1105	1108	1135		1139	1139	NGA	1.90	1.38	1.47	0.07
80/80/80	3-Feb	1	44	1105	1105	1108	1135		1139	1139	NGA	1.76	1.30	1.39	0.06
80/80/80	3-Feb	1	14	1209	1209	1211	1242		1247	1247	NGA	1.64	1.27	1.35	0.05
80/80/80	3-Feb	1	26	1209	1209	1211	1242		1247	1247	NGA	1.44	1.29	1.34	0.03
80/80/80	3-Feb	1	52	1209	1209	1211	1242		1247	1247	NGA	1.88	1.37	1.48	0.07
80/80/80	3-Feb	1	44	1209	1209	1211	1242		1247	1247	NGA	1.62	1.28	1.35	0.04
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**AVE**	STDEV
80/80/80	16-Feb	15	24	859	901	903	931		935	935	NGA	1.50	0.68	1.35	0.05
80/80/80	16-Feb	15	45	859	901	903	931		935	935	NGA	N/A	N/A	N/A	N/A
80/80/80	16-Feb	15	9	859	901	903	931		935	935	NGA	N/A	N/A	N/A	N/A
80/80/80	16-Feb	15	59	859	901	903	931		935	935	NGA	N/A	N/A	N/A	N/A
80/80/80	16-Feb	15	24	1005	1005	1007	1035		1038	1038	NGA	1.82	1.33	1.42	0.07
80/80/80	16-Feb	15	45	1005	1005	1007	1035		1038	1038	NGA	N/A	N/A	N/A	N/A
80/80/80	16-Feb	15	9	1005	1005	1007	1035		1038	1038	NGA	1.78	1.34	1.42	0.06
80/80/80	16-Feb	15	59	1005	1005	1007	1035		1038	1038	NGA	N/A	N/A	N/A	N/A
80/80/80	16-Feb	15	24	1108	1108	1110	1141		1145	1145	NGA	1.81	1.33	1.40	0.06
80/80/80	16-Feb	15	45	1108	1108	1110	1141		1145	1145	NGA	N/A	N/A	N/A	N/A
80/80/80	16-Feb	15	9	1108	1108	1110	1141		1145	1145	NGA	1.88	1.32	1.42	0.08
80/80/80	16-Feb	15	59	1108	1108	1110	1141		1145	1145	NGA	N/A	N/A	N/A	N/A

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	AVE	STDEV
80/80/80	22-Feb	20	54	858	902	906	932		936	936	NGA	1.65	1.31	1.43	0.07
80/80/80	22-Feb	20	10	858	902	906	932		936	936	NGA	1.67	1.15	1.42	0.06
80/80/80	22-Feb	20	26	858	902	906	932		936	936	NGA	1.70	1.30	1.41	0.06
80/80/80	22-Feb	20	1	858	902	906	932		936	936	NGA	1.92	1.27	1.38	0.06
80/80/80	22-Feb	20	54	1004	1006	1009	1036		1040	1040	NGA	N/A	N/A	N/A	N/A
80/80/80	22-Feb	20	10	ABORT	ABORT	ABORT	ABORT				NGA	N/A	N/A	N/A	N/A
80/80/80	22-Feb	20	26	1004	1006	1009	1036		1040	1040	NGA	N/A	N/A	N/A	N/A
80/80/80	22-Feb	20	1	1004	1006	1009	1036		1040	1040	NGA	N/A	N/A	N/A	N/A
80/80/80	22-Feb	20	54	1108	1110	1113	1144		1148	1148	NGA	1.54	1.38	1.44	0.03
80/80/80	22-Feb	20	10	ABORT	ABORT	ABORT	ABORT				NGA	N/A	N/A	N/A	N/A
80/80/80	22-Feb	20	26	1108	1110	1113	1144		1148	1148	NGA	1.65	1.33	1.40	0.00
80/80/80	22-Feb	20	1	1108	1110	1113	1144		1148	1148	NGA	1.74	1.39	1.45	0.04

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	AVE	STDEV
80/80/80	22-Feb	21	12	1240	1241	1244	1311		1315	1315	NGA	1.93	1.27	1.38	0.09
80/80/80	22-Feb	21	44	1240	1241	1244	1311		1315	1315	NGA	1.74	1.21	1.30	0.06
80/80/80	22-Feb	21	31	1240	1241	1244	1311		1315	1315	NGA	1.70	1.32	1.38	0.05
80/80/80	22-Feb	21	38	1240	1241	1244	1311		1315	1315	NGA	1.73	1.37	1.46	0.05
80/80/80	22-Feb	21	12	1344	1345	1348	1415		1419	1419	NGA	1.66	1.35	1.41	0.06
80/80/80	22-Feb	21	44	1344	1345	1348	1415		1419	1419	NGA	1.65	1.23	1.33	0.05
80/80/80	22-Feb	21	31	1344	1345	1348	1415		1419	1419	NGA	1.47	1.31	1.37	0.03
80/80/80	22-Feb	21	38	1344	1345	1348	1415		1419	1419	NGA	1.68	1.36	1.45	0.03
80/80/80	22-Feb	21	12	1448	1449	1452	1522		1526	1526	NGA	1.67	1.34	1.37	0.06
80/80/80	22-Feb	21	44	1448	1449	1452	1522		1526	1526	NGA	1.68	1.21	1.29	0.06
80/80/80	22-Feb	21	31	1448	1449	1452	1522		1526	1526	NGA	1.60	1.30	1.33	0.04
80/80/80	22-Feb	21	38	1448	1449	1452	1522		1526	1526	NGA	1.70	1.39	1.33	0.03

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	AVE	STDEV
80/80/80	23-Feb	22	34	905	909	913	913		942	942	NGA	1.63	1.32	1.43	0.05
80/80/80	23-Feb	22	40	ABORT							NGA	N/A	N/A	N/A	N/A
80/80/80	23-Feb	22	63	905	909	913	913		942	942	NGA	1.68	1.26	1.34	0.05
80/80/80	23-Feb	22	19	905	909	913	913		942	942	NGA	1.83	1.28	1.40	0.08
80/80/80	23-Feb	22	34	1011	1012	1015	1042		1046	1046	NGA	1.60	1.38	1.45	0.03
80/80/80	23-Feb	22	40	ABORT							NGA	N/A	N/A	N/A	N/A

80/80/80	23-Feb	22	63	1011	1012	1015	1042		1046	1046	NGA	1.54	1.36	1.45	0.03
80/80/80	23-Feb	22	19	1011	1012	1015	1042		1046	1046	NGA	1.59	1.37	1.42	0.04
80/80/80	23-Feb	22	34	1115	1116	1119	1150		1154	1154	NGA	1.53	1.38	1.44	0.03
80/80/80	23-Feb	22	40	ABORT							NGA	N/A	N/A	N/A	N/A
80/80/80	23-Feb	22	63	1115	1116	1119	1150		1154	1154	NGA	1.60	1.38	1.45	0.04
80/80/80	23-Feb	22	19	1115	1116	1119	1150		1154	1154	NGA	1.66	1.35	1.41	0.04
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	AVE	STDEV
80/80/80	24-Feb	24	64	906	909	911	939		942	942	NGA	N/A	N/A	N/A	N/A
80/80/80	24-Feb	24	53	906	909	911	939		942	942	NGA	1.85	1.25	1.37	0.06
80/80/80	24-Feb	24	47	906	909	911	939		942	942	NGA	1.50	1.24	1.33	0.05
80/80/80	24-Feb	24	65	906	909	911	939		942	942	NGA	1.77	1.23	1.37	0.06
80/80/80	24-Feb	24	64	1011	1012	1015	1042		1046	1046	NGA	N/A	N/A	N/A	N/A
80/80/80	24-Feb	24	53	1011	1012	1015	1042		1046	1046	NGA	2.00	1.37	1.43	0.06
80/80/80	24-Feb	24	47	1011	1012	1015	1042		1046	1046	NGA	1.48	1.28	1.37	0.04
80/80/80	24-Feb	24	65	1011	1012	1015	1042		1046	1046	NGA	1.81	1.33	1.40	0.05
80/80/80	24-Feb	24	64	1116	1119	1111	1149		1153	1153	NGA	N/A	N/A	N/A	N/A
80/80/80	24-Feb	24	53	1116	1119	1111	1149		1153	1153	NGA	1.92	1.11	1.41	0.07
80/80/80	24-Feb	24	47	1116	1119	1111	1149		1153	1153	NGA	1.53	1.26	1.35	0.04
80/80/80	24-Feb	24	65	1116	1119	1111	1149		1153	1153	NGA	1.63	1.31	1.37	0.03
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**AVE**	**STDEV**
80/80/80	13-Mar	26	13	1003	1006	1009	1036		1041	1041	NGA	N/A	N/A	N/A	N/A
80/80/80	13-Mar	26	14	1003	1006	1009	1036		1041	1041	NGA	N/A	N/A	N/A	N/A
80/80/80	13-Mar	26	66	1003	1006	1009	1036		1041	1041	NGA	N/A	N/A	N/A	N/A
80/80/80	13-Mar	26	19	1003	1006	1009	1036		1041	1041	NGA	N/A	N/A	N/A	N/A
80/80/80	13-Mar	26	13	1110	1111	1113	1141		1145	1145	NGA	N/A	N/A	N/A	N/A
80/80/80	13-Mar	26	14	1110	1111	1113	1141		1145	1145	NGA	N/A	N/A	N/A	N/A
80/80/80	13-Mar	26	66	1110	1111	1113	1141		1145	1145	NGA	N/A	N/A	N/A	N/A
80/80/80	13-Mar	26	19	1110	1111	1113	1141		1145	1145	NGA	N/A	N/A	N/A	N/A
80/80/80	13-Mar	26	13	1214	1215	1217	1248		1252	1252	NGA	1.82	1.36	1.45	0.05
80/80/80	13-Mar	26	14	1214	1215	1217	1248		1252	1252	NGA	1.92	1.32	1.42	0.08
80/80/80	13-Mar	26	66	1214	1215	1217	1248		1252	1252	NGA	1.65	1.27	1.39	0.04
80/80/80	13-Mar	26	19	1214	1215	1217	1248		1252	1252	NGA	1.78	1.32	1.40	0.06
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**AVE**	**STDEV**

80/80/80	17-Feb	17	17	849	850	853	920		924	925	NGA	1.89	1.28	1.40	0.08
80/80/80	17-Feb	17	8	ABORT							NGA	N/A	N/A	N/A	N/A
80/80/80	17-Feb	17	43	849	850	853	920		924	925	NGA	1.78	1.26	1.36	0.08
80/80/80	17-Feb	17	57	849	850	853	920		924	925	NGA	1.72	1.26	1.38	0.06
80/80/80	17-Feb	17	17	953	954	956	1024		1028	1028	NGA	2.03	1.35	1.45	0.09
80/80/80	17-Feb	17	8	ABORT					1028	1028	NGA	N/A	N/A	N/A	N/A
80/80/80	17-Feb	17	43	953	954	956	1024		1028	1028	NGA	1.68	1.30	1.36	0.06
80/80/80	17-Feb	17	57	953	954	956	1024		1028	1028	NGA	1.70	1.31	1.42	0.06
80/80/80	17-Feb	17	17	1057	1058	1100	1131		1134	1134	NGA	1.52	1.32	1.41	0.04
80/80/80	17-Feb	17	8	ABORT					1134	1134	NGA	N/A	N/A	N/A	N/A
80/80/80	17-Feb	17	43	1057	1058	1100	1131		1134	1134	NGA	1.50	1.26	1.33	0.04
80/80/80	17-Feb	17	57	1057	1058	1100	1131		1134	1134	NGA	1.66	1.34	1.40	0.04

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	AVE	STDEV
100 x 3	8-Feb	5	5	920	924	926	944		948	948	NGA	1.60	1.29	1.42	0.08
100 x 3	8-Feb	5	17	920	924	926	944		948	948	NGA	1.74	1.29	1.46	0.14
100 x 3	8-Feb	5	47	920	924	926	944		948	948	NGA	1.53	1.27	1.40	0.06
100 x 3	8-Feb	5	37	920	924	926	944		948	948	NGA	1.52	1.25	1.35	0.06
100 x 3	8-Feb	5	5	1017	1018	1021	1033		1037	1038	NGA	1.61	1.37	1.48	0.06
100 x 3	8-Feb	5	17	1017	1018	1021	1033		1037	1038	NGA	1.54	1.30	1.41	0.07
100 x 3	8-Feb	5	47	1017	1018	1021	1033		1037	1038	NGA	1.73	1.34	1.50	0.10
100 x 3	8-Feb	5	37	1017	1018	1021	1033		1037	1038	NGA	1.61	1.30	1.38	0.08
100 x 3	8-Feb	5	5	1107	1107	1110	1123		1128	1128	NGA	1.79	1.37	1.49	0.12
100 x 3	8-Feb	5	17	1107	1107	1110	1123		1128	1128	NGA	1.59	1.30	1.47	0.08
100 x 3	8-Feb	5	47	1107	1107	1110	1123		1128	1128	NGA	1.67	1.38	1.47	0.06
100 x 3	8-Feb	5	37	1107	1107	1110	1123		1128	1128	NGA	1.72	1.29	1.39	0.08

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	AVE	STDEV
100 x 3	8-Feb	6	32	1230	1233	1236	1253		1257	1258	NGA	1.60	1.30	1.41	0.08
100 x 3	8-Feb	6	49	1230	1233	1236	1253		1257	1258	NGA	1.74	1.30	1.46	0.14
100 x 3	8-Feb	6	30	1230	1233	1236	1253		1257	1258	NGA	1.53	1.30	1.40	0.06
100 x 3	8-Feb	6	48	ABORT							NGA	N/A	N/A	N/A	N/A
100 x 3	8-Feb	6	32	1327	1327	1330	1342		1347	1347	NGA	1.73	1.31	1.56	0.11
100 x 3	8-Feb	6	49	1327	1327	1330	1342		1347	1347	NGA	1.51	1.38	1.43	0.03
100 x 3	8-Feb	6	30	1327	1327	1330	1342		1347	1347	NGA	N/A	N/A	N/A	N/A
100 x 3	8-Feb	6	48	ABORT							NGA	N/A	N/A	N/A	N/A

100 x 3	8-Feb	6	32	1416	1417	1420	1433		1437	1438	NGA	1.71	1.30	1.48	0.11
100 x 3	8-Feb	6	49	1416	1417	1420	1433		1437	1438	NGA	1.54	1.37	1.43	0.04
100 x 3	8-Feb	6	30	1416	1417	1420	1433		1437	1438	NGA	N/A	N/A	N/A	N/A
100 x 3	8-Feb	6	48	ABORT								N/A	N/A	N/A	N/A
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**AVE**	STDEV
100 x 3	9-Feb	7	42	ABORT							NGA	N/A	N/A	N/A	N/A
100 x 3	9-Feb	7	14	857	902	905	925		929	929	NGA	3.84	1.28	1.66	0.75
100 x 3	9-Feb	7	44	857	902	905	925		929	929	NGA	3.33	1.29	1.58	0.56
100 x 3	9-Feb	7	38	857	902	905	925		929	929	NGA	1.64	1.27	1.38	0.06
100 x 3	9-Feb	7	42	ABORT							NGA	N/A	N/A	N/A	N/A
100 x 3	9-Feb	7	14	956	959	1002	1017		1021	1021	NGA	1.57	1.33	1.44	0.06
100 x 3	9-Feb	7	44	956	959	1002	1017		1021	1021	NGA	1.66	1.37	1.47	0.07
100 x 3	9-Feb	7	38	956	959	1002	1017		1021	1021	NGA	1.74	1.34	1.44	0.07
100 x 3	9-Feb	7	42	ABORT							NGA	N/A	N/A	N/A	N/A
100 x 3	9-Feb	7	14	1050	1051	1053	1109		1115	1115	NGA	1.96	1.34	1.47	0.12
100 x 3	9-Feb	7	44	1050	1051	1053	1109		1115	1115	NGA	1.88	1.38	1.52	0.11
100 x 3	9-Feb	7	38	1050	1051	1053	1109		1115	1115	NGA	1.94	1.35	1.47	0.13
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**AVE**	STDEV
100 x 3	9-Feb	8	35	1210	1211	1214	1231		1236	1236	NGA	1.56	1.34	1.41	0.04
100 x 3	9-Feb	8	1	1210	1211	1214	1231		1236	1236	NGA	1.55	1.35	1.42	0.04
100 x 3	9-Feb	8	52	ABORT					1236	1236	NGA	N/A	N/A	N/A	N/A
100 x 3	9-Feb	8	34	1210	1211	1214	1231				NGA	1.87	1.34	1.42	0.06
100 x 3	9-Feb	8	35	1305	1306	1309	1321		1326	1326	NGA	1.59	1.35	1.44	0.07
100 x 3	9-Feb	8	1	1305	1306	1309	1321		1326	1326	NGA	1.65	1.35	1.44	0.08
100 x 3	9-Feb	8	52	ABORT							NGA	N/A	N/A	N/A	N/A
100 x 3	9-Feb	8	34	1305	1306	1309	1321		1326	1326	NGA	1.75	1.31	1.44	0.07
100 x 3	9-Feb	8	35	1355	1356	1359	1412		1416	1416	NGA	1.59	1.35	1.43	0.06
100 x 3	9-Feb	8	1	1355	1356	1359	1412		1416	1416	NGA	1.57	1.34	1.42	0.06
100 x 3	9-Feb	8	52	ABORT					1416	1416	NGA	N/A	N/A	N/A	N/A
100 x 3	9-Feb	8	34	1355	1356	1359	1412		1416	1416	NGA	1.72	1.33	1.44	0.07
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**AVE**	STDEV
100 x 3	10-Feb	9	7	918	918	922	938		943	943	NGA	1.55	1.29	1.39	0.06
100 x 3	10-Feb	9	31	ABORT							NGA	N/A	N/A	N/A	N/A

100 x 3	10-Feb	9	51	918	918	922	938		943	943	NGA	1.55	1.28	1.37	0.06
100 x 3	10-Feb	9	2	918	918	922	938		943	943	NGA	1.61	1.26	1.38	0.08
100 x 3	10-Feb	9	7	1011	1013	1017	1028		1032	1032	NGA	1.77	1.33	1.50	0.14
100 x 3	10-Feb	9	31	ABORT							NGA	N/A	N/A	N/A	N/A
100 x 3	10-Feb	9	51	1011	1013	1017	1028		1032	1032	NGA	1.81	1.34	1.53	0.13
100 x 3	10-Feb	9	2	1011	1013	1017	1028		1032	1032	NGA	1.76	1.32	1.52	0.13
100 x 3	10-Feb	9	7	1101	1102	1105	1118		1122	1122	NGA	1.87	1.30	1.43	0.12
100 x 3	10-Feb	9	31	ABORT							NGA	N/A	N/A	N/A	N/A
100 x 3	10-Feb	9	51	1101	1102	1105	1118		1122	1122	NGA	1.71	1.35	1.47	0.08
100 x 3	10-Feb	9	2	1101	1102	1105	1118		1122	1122	NGA	4.42	1.33	1.44	0.17

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	AVE	STDEV
100 x 3	10-Feb	10	45	1227	1227	1230	1247		1252	1252	NGA	1.55	1.30	1.39	0.06
100 x 3	10-Feb	10	43	1227	1227	1230	1247		1252	1252	NGA	1.54	1.29	1.35	0.06
100 x 3	10-Feb	10	28	1227	1227	1230	1247		1252	1252	NGA	1.80	1.33	1.47	0.14
100 x 3	10-Feb	10	24	1227	1227	1230	1247		1252	1252	NGA	1.54	1.32	1.39	0.03
100 x 3	10-Feb	10	45	1322	1322	1324	1337		1341	1341	NGA	1.59	1.36	1.43	0.05
100 x 3	10-Feb	10	43	1322	1322	1324	1337		1341	1341	NGA	1.55	1.30	1.36	0.07
100 x 3	10-Feb	10	28	1322	1322	1324	1337		1341	1341	NGA	1.92	1.33	1.50	0.16
100 x 3	10-Feb	10	24	1322	1322	1324	1337		1341	1341	NGA	1.67	1.32	1.39	0.05
100 x 3	10-Feb	10	45	1410	1411	1414	1427		1432	1432	NGA	1.89	1.34	1.43	0.09
100 x 3	10-Feb	10	43	1410	1411	1414	1427		1432	1432	NGA	1.82	1.30	1.38	0.10
100 x 3	10-Feb	10	28	1410	1411	1414	1427		1432	1432	NGA	2.14	1.34	1.51	0.19
100 x 3	10-Feb	10	24	1410	1411	1414	1427		1432	1432	NGA	1.74	1.31	1.41	0.08

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	AVE	STDEV
100 x 3	14-Feb	11	5	ABORT							NGA	N/A	N/A	N/A	N/A
100 x 3	14-Feb	11	27	ABORT							NGA	N/A	N/A	N/A	N/A
100 x 3	14-Feb	11	32	ABORT							NGA	N/A	N/A	N/A	N/A
100 x 3	14-Feb	11	49	951	953	955	1012		1016	1016	NGA	1.76	1.23	1.32	0.07
100 x 3	14-Feb	11	49	1045	1047	1049	1101		1105		NGA	1.79	1.29	1.52	0.14
100 x 3	14-Feb	11	49	1135	1135	1138	1151		1156	1156	NGA	1.82	1.33	1.56	0.10

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	AVE	STDEV
100 x 3	14-Feb	12	50	1234	1236	1238	1256		1300	1300	NGA	N/A	N/A	N/A	N/A

100 x 3	14-Feb	12	57	1234	1236	1238	1256		1300	1300	NGA	N/A	N/A	N/A	N/A
100 x 3	14-Feb	12	56	1234	1236	1238	1256		1300	1300	NGA	N/A	N/A	N/A	N/A
100 x 3	14-Feb	12	21	1234	1236	1238	1256		1300	1300	NGA	N/A	N/A	N/A	N/A
100 x 3	14-Feb	12	50	1329	1330	1333	1345		1350	1350	NGA	1.51	1.31	1.37	0.04
100 x 3	14-Feb	12	57	1329	1330	1333	1345		1350	1350	NGA	1.45	1.31	1.35	0.03
100 x 3	14-Feb	12	56	1329	1330	1333	1345		1350	1350	NGA	1.64	1.35	1.44	0.06
100 x 3	14-Feb	12	21	1329	1330	1333	1345		1350	1350	NGA	1.55	1.25	1.34	0.05
100 x 3	14-Feb	12	50	1419	1420	1423	1436		1440	1440	NGA	1.51	1.30	1.37	0.05
100 x 3	14-Feb	12	57	1419	1420	1423	1436		1440	1440	NGA	1.49	1.30	1.37	0.04
100 x 3	14-Feb	12	56	1419	1420	1423	1436		1440	1440	NGA	1.62	1.35	1.44	0.07
100 x 3	14-Feb	12	21	1419	1420	1423	1436		1440	1440	NGA	1.49	1.26	1.33	0.04
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**AVE**	**STDEV**
100 x 3	15-Feb	13	37	945	949	952	1009		1014	1014	NGA	1.56	1.31	1.40	0.06
100 x 3	15-Feb	13	13	945	949	952	1009		1014	1014	NGA	1.54	1.31	1.40	0.06
100 x 3	15-Feb	13	44	945	949	952	1009		1014	1014	NGA	1.63	1.29	1.42	0.06
100 x 3	15-Feb	13	14	945	949	952	1009		1014	1014	NGA	1.76	1.27	1.38	0.07
100 x 3	15-Feb	13	37	1044	1044	1047	1059		1103	1103	NGA	1.63	1.38	1.46	0.07
100 x 3	15-Feb	13	13	1044	1044	1047	1059		1103	1103	NGA	1.58	1.34	1.42	0.06
100 x 3	15-Feb	13	44	1044	1044	1047	1059		1103	1103	NGA	1.59	1.39	1.48	0.05
100 x 3	15-Feb	13	14	1044	1044	1047	1059		1103	1103	NGA	1.78	1.34	1.42	0.06
100 x 3	15-Feb	13	37	1132	1133	1136	1149		1154	1154	NGA	1.88	1.36	1.47	0.10
100 x 3	15-Feb	13	13	1132	1133	1136	1149		1154	1154	NGA	1.73	1.33	1.42	0.08
100 x 3	15-Feb	13	44	1132	1133	1136	1149		1154	1154	NGA	2.01	1.39	1.53	0.13
100 x 3	15-Feb	13	14	1132	1133	1136	1149		1154	1154	NGA	1.94	1.34	1.48	0.14

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
90/90	3-Feb	2	13	1346	1350	1353	1420		1425	1425	NGA	1.56	1.28	1.35	0.05
90/90	3-Feb	2	35	1346	1350	1353	1420		1425	1425	NGA	1.48	1.28	1.34	0.04

90/90	3-Feb	2	38	1346	1350	1353	1420		1425	1425	NGA	1.55	1.39	1.47	0.04
90/90	3-Feb	2	1	1346	1350	1353	1420		1425	1425	NGA	1.57	1.27	1.47	0.04
90/90	3-Feb	2	13	1454	1455	1458	1523		1529	1529	NGA	1.47	1.25	1.33	0.04
90/90	3-Feb	2	35	1454	1455	1458	1523		1529	1529	NGA	1.49	1.24	1.34	0.05
90/90	3-Feb	2	38	1454	1455	1458	1523		1529	1529	NGA	1.63	1.40	1.47	0.05
90/90	3-Feb	2	1	1454	1455	1458	1523		1529	1529	NGA	1.72	1.27	1.33	0.04

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
90/90	14-Mar	28	23	908	910	913	940		943	944	NGA	1.55	1.30	1.41	0.04
90/90	14-Mar	28	28	908	910	913	940		943	944	NGA	1.92	1.26	1.40	0.11
90/90	14-Mar	28	9	908	910	913	940		943	944	NGA	1.90	1.28	1.37	0.08
90/90	14-Mar	28	61	908	910	913	940		943	944	NGA	1.80	1.28	1.41	0.10
90/90	14-Mar	28	23	1012	1013	1016	1041		1045	1046	NGA	N/A	N/A	N/A	N/A
90/90	14-Mar	28	28	1012	1013	1016	1041		1045	1046	NGA	1.99	1.14	1.43	0.10
90/90	14-Mar	28	9	1012	1013	1016	1041		1045	1046	NGA	1.79	1.31	1.38	0.05
90/90	14-Mar	28	61	1012	1013	1016	1041		1045	1046	NGA	1.53	1.31	1.39	0.03

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
90/90	15-Mar	29	41	857	858	901	928		933	933	NGA	1.71	1.30	1.42	0.08
90/90	15-Mar	29	64	857	858	901	928		933	933	NGA	1.85	1.26	1.38	0.06
90/90	15-Mar	29	47	857	858	901	928		933	933	NGA	1.83	1.25	1.41	0.11
90/90	15-Mar	29	53	857	858	901	928		933	933	NGA	2.15	1.26	1.38	0.10
90/90	15-Mar	29	41	1002	1003	1005	1031		1035	1035	NGA	1.59	1.31	1.42	0.06
90/90	15-Mar	29	64	1002	1003	1005	1031		1035	1035	NGA	1.57	1.34	1.42	0.04
90/90	15-Mar	29	47	1002	1003	1005	1031		1035	1035	NGA	1.64	1.27	1.42	0.09
90/90	15-Mar	29	53	1002	1003	1005	1031		1035	1035	NGA	1.88	1.32	1.39	0.06

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSYTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
90/90	15-Mar	30	59	1123	1126	1128	1156		1200	1200	NGA	1.48	1.29	1.38	0.04
90/90	15-Mar	30	21	1123	1126	1128	1156		1200	1200	NGA	1.66	1.30	1.38	0.04
90/90	15-Mar	30	30	1123	1126	1128	1156		1200	1200	NGA	1.47	1.22	1.36	0.05
90/90	15-Mar	30	50	1123	1126	1128	1156		1200	1200	NGA	1.89	1.33	1.41	0.06

90/90	15-Mar	30	59	1229	1230	1233	1258		1302	1303	NGA	1.44	1.29	1.36	0.03
90/90	15-Mar	30	21	1229	1230	1233	1258		1303	1303	NGA	1.57	1.28	1.41	0.04
90/90	15-Mar	30	30	1229	1230	1233	1258		1303	1303	NGA	1.50	1.30	1.37	0.04
90/90	15-Mar	30	50	1229	1230	1233	1258		1303	1303	NGA	1.61	1.30	1.41	0.04
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**20 FSW**	**RS**	**OFF GAS**	**SYSYTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
90/90	16-Mar	31	13	853	855	858	925		929	929	NGA	1.74	1.28	1.38	0.04
90/90	16-Mar	31	19	853	855	858	925		929	929	NGA	1.57	1.28	1.39	0.07
90/90	16-Mar	31	2	853	855	858	925		929	929	NGA	1.91	1.32	1.45	0.05
90/90	16-Mar	31	44	853	855	858	925		929	929	NGA	1.82	1.31	1.43	0.05
90/90	16-Mar	31	13	958	959	1002	1027		1031	1031	NGA	1.62	1.35	1.41	0.03
90/90	16-Mar	31	19	958	959	1002	1027		1031	1031	NGA	1.79	1.35	1.44	0.05
90/90	16-Mar	31	2	958	959	1002	1027		1031	1031	NGA	1.77	1.41	1.49	0.04
90/90	16-Mar	31	44	958	959	1002	1027		1031	1031	NGA	1.74	1.25	1.37	0.06
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**20 FSW**	**RS**	**OFF GAS**	**SYSYTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
90/90	16-Mar	32	43	1158	1159	1202	1229		1233	1233	NGA	N/A	N/A	N/A	N/A
90/90	16-Mar	32	67	1158	1159	1202	1229		1233	1233	NGA	N/A	N/A	N/A	N/A
90/90	16-Mar	32	26	1158	1159	1202	1229		1233	1233	NGA	N/A	N/A	N/A	N/A
90/90	16-Mar	32	55	1158	1159	1202	1229		1233	1233	NGA	N/A	N/A	N/A	N/A
90/90	16-Mar	32	43	1301	1303	1306	1331		1235	1235	NGA	N/A	N/A	N/A	N/A
90/90	16-Mar	32	67	1301	1303	1306	1331		1235	1235	NGA	N/A	N/A	N/A	N/A
90/90	16-Mar	32	26	1301	1303	1306	1331		1235	1235	NGA	N/A	N/A	N/A	N/A
90/90	16-Mar	32	55	1301	1303	1306	1331		1235	1235	NGA	N/A	N/A	N/A	N/A
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**20 FSW**	**RS**	**OFF GAS**	**SYSYTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
90/90	20-Mar	33	45	903	904	907	934		938	938	NGA	N/A	N/A	N/A	N/A
90/90	20-Mar	33	68	903	904	907	934		938	938	NGA	N/A	N/A	N/A	N/A
90/90	20-Mar	33	51	903	904	907	934		938	938	NGA	N/A	N/A	N/A	N/A
90/90	20-Mar	33	55	903	904	907	934		938	938	NGA	N/A	N/A	N/A	N/A
90/90	20-Mar	33	45	1007	1008	1011	1036		1040	1040	NGA	1.56	1.37	1.44	0.04
90/90	20-Mar	33	68	1007	1008	1011	1036		1040	1040	NGA	1.91	1.38	1.52	0.13

90/90	20-Mar	33	51	1007	1008	1011	1036		1040	1040	NGA	1.64	1.39	1.48	0.06
90/90	20-Mar	33	55	1007	1008	1011	1036		1040	1040	NGA	1.63	1.38	1.46	0.05
DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSYTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
110/110	21-Mar	35	41	854	855	858	915		920	920	NGA	1.68	1.30	1.42	0.09
110/110	21-Mar	35	53	854	855	858	915		920	920	NGA	1.65	1.29	1.41	0.08
110/110	21-Mar	35	61	854	855	858	915		920	920	MS	1.83	1.27	1.48	0.16
110/110	21-Mar	35	69	854	855	858	915		920	920	MS	2.55	1.32	1.44	0.13
110/110	21-Mar	35	41	949	950	953	1007		1012	1012	NGA	1.70	1.39	1.51	0.09
110/110	21-Mar	35	53	949	950	953	1007		1012	1012	NGA	1.66	1.40	1.49	0.08
110/110	21-Mar	35	61	949	950	953	1007		1012	1012	MS	1.61	1.36	1.46	0.07
110/110	21-Mar	35	69	949	950	953	1007		1012	1012	MS	2.43	1.29	1.43	0.16
DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSYTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
110/110	22-Mar	38	54	1009	1012	1016	1032		1037	1037	NGA	1.58	1.32	1.40	0.07
110/110	22-Mar	38	1	1009	1012	1016	1032		1037	1037	NGA	1.54	1.30	1.39	0.06
110/110	22-Mar	38	12	1009	1012	1016	1032		1037	1037	MS	3.94	1.23	1.42	0.35
110/110	22-Mar	38	44	1009	1012	1016	1032		1037	1037	MS	2.11	1.31	1.44	0.11
110/110	22-Mar	38	54	1106	1107	1110	1127		1129	1129	NGA	1.58	1.40	1.47	0.05
110/110	22-Mar	38	1	1106	1107	1110	1127		1129	1129	NGA	1.76	1.38	1.49	0.09
110/110	22-Mar	38	12	1106	1107	1110	1127		1129	1129	MS	1.58	1.31	1.42	0.05
110/110	22-Mar	38	44	1106	1107	1110	1127		1129	1129	MS	1.64	1.37	1.47	0.07
DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSYTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
110/110	23-Mar	40	9	848	850	853	910		915	915	NGA	1.82	1.31	1.43	0.09
110/110	23-Mar	40	43	848	850	853	910		915	915	NGA	1.83	1.29	1.45	0.13
110/110	23-Mar	40	51	848	850	853	910		915	915	MS	2.06	1.25	1.40	0.14
110/110	23-Mar	40	24	848	850	853	910		915	915	MS	2.36	1.22	1.41	0.12
110/110	23-Mar	40	9	943	944	948	1002		1007	1007	NGA	1.59	1.39	1.48	0.05
110/110	23-Mar	40	43	943	944	948	1002		1007	1007	NGA	1.67	1.39	1.48	0.07
110/110	23-Mar	40	51	943	944	948	1002		1007	1007	MS	1.56	1.36	1.44	0.05
110/110	23-Mar	40	24	943	944	948	1002		1007	1007	MS	1.54	1.39	1.46	0.04

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSYTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
110/110	22-May	42	45	ABORT						1211	MS	N/A	N/A	N/A	N/A
110/110	22-May	42	24	1143	1146	1149	1206		1210	1211	MS	1.63	1.28	1.41	0.08
110/110	22-May	42	9	1143	1146	1149	1206		1210	1211	NGA	N/A	N/A	N/A	N/A
110/110	22-May	42	22	1143	1146	1149	1206		1210	1211	NGA	1.80	1.30	1.47	0.14
110/110	22-May	42	45	ABORT							MS	0.89	0.88	0.88	1.50
110/110	22-May	42	24	1239	1241	1244	1258		1303	1304	MS	2.29	1.31	1.51	0.14
110/110	22-May	42	9	1239	1241	1244	1258		1303	1304	NGA	N/A	N/A	N/A	N/A
110/110	22-May	42	22	1239	1241	1244	1258		1303	1304	NGA	2.34	1.30	1.50	0.17

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSYTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
110/110	23-May	44	31	ABORT							MS	N/A	N/A	N/A	N/A
110/110	23-May	44	5	956	957	1000	1017		1022	1023	MS	N/A	N/A	N/A	N/A
110/110	23-May	44	47	956	957	1000	1017		1022	1023	MS	N/A	N/A	N/A	N/A
110/110	23-May	44	49	956	957	1000	1017		1022	1023	MS	N/A	N/A	N/A	N/A
110/110	23-May	44	31	ABORT							MS	N/A	N/A	N/A	N/A
110/110	23-May	44	5	1051	1052	1055	1109		1113	1114	MS	2.46	1.37	1.52	0.15
110/110	23-May	44	47	1051	1052	1055	1109		1113	1114	MS	2.13	1.22	1.41	0.11
110/110	23-May	44	49	1051	1052	1055	1109		1113	1114	MS	1.83	0.00	1.24	0.36

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSYTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
110/110	24-May	45	71	946	949	952	1009		1014	1015	MS	N/A	N/A	N/A	N/A
110/110	24-May	45	1	946	949	952	1009		1014	1015	MS	N/A	N/A	N/A	N/A
110/110	24-May	45	44	946	949	952	1009		1014	1015	MS	N/A	N/A	N/A	N/A
110/110	24-May	45	67	946	949	952	1009		1014	1015	MS	N/A	N/A	N/A	N/A
110/110	24-May	45	71	1043	1044	1048	1101		1106	1107	MS	2.11	1.32	1.47	0.12
110/110	24-May	45	1	1043	1044	1048	1101		1106	1107	MS	2.28	1.35	1.54	0.14
110/110	24-May	45	44	1043	1044	1048	1101		1106	1107	MS	1.83	1.32	1.46	0.10
110/110	24-May	45	67	1043	1044	1048	1101		1106	1107	MS	2.42	1.28	1.46	0.17

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSYTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
110/110	25-May	47	72	915	918	921	938		943	944	MS	N/A	N/A	N/A	N/A
110/110	25-May	47	9	915	918	921	938		943	944	MS	N/A	N/A	N/A	N/A
110/110	25-May	47	73	915	918	921	938		943	944	MS	N/A	N/A	N/A	N/A
110/110	25-May	47	74	915	918	921	938		943	944	MS	N/A	N/A	N/A	N/A
110/110	25-May	47	72	1013	1013	1016	1030		1034	1034	MS	2.23	1.33	1.50	0.22
110/110	25-May	47	9	1013	1013	1016	1030		1034	1034	MS	2.33	1.34	1.54	0.19
110/110	25-May	47	73	1013	1013	1016	1030		1034	1034	MS	2.29	1.54	1.77	0.19
110/110	25-May	47	74	1013	1013	1016	1030		1034	1034	MS	2.18	1.32	1.46	0.20

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSYTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
110/110	25-May	48	75	1138	1139	1142	1159		1204	1205	MS	N/A	N/A	N/A	N/A
110/110	25-May	48	38	1138	1139	1142	1159		1204	1205	MS	N/A	N/A	N/A	N/A
110/110	25-May	48	51	1138	1139	1142	1159		1204	1205	MS	N/A	N/A	N/A	N/A
110/110	25-May	48	55	1138	1139	1142	1159		1204	1205	MS	N/A	N/A	N/A	N/A
110/110	25-May	48	75	1233	1234	1237	1251		1256	1257	MS	2.29	1.28	1.42	0.16
110/110	25-May	48	38	1233	1234	1237	1251		1256	1257	MS	2.60	1.39	1.56	0.22
110/110	25-May	48	51	1233	1234	1237	1251		1256	1257	MS	2.10	1.32	1.46	0.13
110/110	25-May	48	55	1233	1234	1237	1251		1256	1257	MS	1.89	1.27	1.39	0.11

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSYTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
110/110	25-May	49	60	1336	1337	1339	1357		1401	1402	MS	2.26	1.23	1.41	0.16
110/110	25-May	49	45	1336	1337	1339	1357		1401	1402	MS	2.23	1.34	1.45	0.15
110/110	25-May	49	63	1336	1337	1339	1357		1401	1402	MS	2.21	1.24	1.39	0.17
110/110	25-May	49	60	1430	1431	1434	1448		1452	1453	MS	2.41	1.30	1.30	0.30
110/110	25-May	49	45	1430	1431	1434	1448		1452	1453	MS	2.22	1.32	1.37	0.27
110/110	25-May	49	63	1430	1431	1434	1448		1452	1453	MS	1.95	1.31	1.26	0.33

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSYTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
130/130	30-May	50	72	952	953	957	1008		1013	1014	MS	2.31	1.28	1.52	0.20
130/130	30-May	50	76	952	953	957	1008		1013	1014	MS	2.54	1.25	1.53	0.26

130/130	30-May	50	12	952	953	957	1008		1013	1014	MS	2.39	1.30	1.59	0.24
130/130	30-May	50	74	952	953	957	1008		1013	1014	MS	2.40	1.29	1.57	0.21
130/130	30-May	50	72	1042	1043	1048	1055		1100	1101	MS	2.40	1.32	1.62	0.23
130/130	30-May	50	76	1042	1043	1048	1055		1100	1101	MS	2.68	1.29	1.65	0.28
130/130	30-May	50	12	1042	1043	1048	1055		1100	1101	MS	2.36	1.37	1.66	0.23
130/130	30-May	50	74	1042	1043	1048	1055		1100	1101	MS	2.37	1.30	1.54	0.24

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSYTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
130/130	30-May	51	47	1200	1201	1205	1216		1221	1222	MS	1.75	1.39	1.38	0.26
130/130	30-May	51	10	1200	1201	1205	1216		1221	1222	MS	1.79	1.36	1.36	0.23
130/130	30-May	51	19	1200	1201	1205	1216		1221	1222	MS	1.82	1.39	1.40	0.35
130/130	30-May	51	48	1200	1201	1205	1216		1221	1222	MS	1.81	1.29	1.29	0.34
130/130	30-May	51	47	1250	1251	1254	1303		1308	1308	MS	N/A	N/A	N/A	N/A
130/130	30-May	51	10	1250	1251	1254	1303		1308	1308	MS	N/A	N/A	N/A	N/A
130/130	30-May	51	19	1250	1251	1254	1303		1308	1308	MS	N/A	N/A	N/A	N/A
130/130	30-May	51	48	1250	1251	1254	1303		1308	1308	MS	N/A	N/A	N/A	N/A

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSYTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
130/130	31-May	53	77	1016	1019	1023	1034		1040	1040	MS	1.44	0.00	1.01	0.30
130/130	31-May	53	1	1016	1019	1023	1034		1040	1040	MS	3.57	0.85	1.79	0.32
130/130	31-May	53	52	1016	1019	1023	1034		1040	1040	MS	1.79	1.26	1.46	0.14
130/130	31-May	53	61	1016	1019	1023	1034		1040	1040	MS	1.74	1.28	1.45	0.12
130/130	31-May	53	77	1109	1110	1113	1122		1127	1127	MS	2.02	1.49	1.64	0.09
130/130	31-May	53	1	1109	1110	1113	1122		1127	1127	MS	1.82	1.39	1.56	0.12
130/130	31-May	53	61	1109	1110	1113	1122		1127	1127	MS	1.76	1.30	1.47	0.13
130/130	31-May	53	77	1109	1110	1113	1122		1127	1127	MS	1.89	1.26	1.46	0.13

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	20 FSW	RS	OFF GAS	SYSYTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
130/130	31-May	54	78	1215	1219	1223	1234		1239	1239	MS	2.02	1.49	1.64	0.09
130/130	31-May	54	39	1215	1219	1223	1234		1239	1239	MS	1.82	1.39	1.56	0.12
130/130	31-May	54	32	1215	1219	1223	1234		1239	1239	MS	1.76	1.30	1.47	0.13
130/130	31-May	54	79	1215	1219	1223	1234		1239	1239	MS	1.89	1.26	1.46	0.13

130/130	31-May	54	78	1308	1309	1313	1321		1327	1327	MS	2.65	1.52	1.97	0.31
130/130	31-May	54	39	1308	1309	1313	1321		1327	1327	MS	1.76	1.38	1.51	0.10
130/130	31-May	54	32	1308	1309	1313	1321		1327	1327	MS	1.79	1.32	1.54	0.13
130/130	31-May	54	79	1308	1309	1313	1321		1327	1327	MS	1.81	1.33	1.52	0.12
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**20 FSW**	**RS**	**OFF GAS**	**SYSYTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
130/130	1-Jun	56	45	853	855	900	910		916	916	MS	1.75	1.25	1.44	0.14
130/130	1-Jun	56	51	853	855	900	910		916	916	MS	1.68	1.32	1.48	0.10
130/130	1-Jun	56	30	853	855	900	910		916	916	MS	1.72	1.03	1.42	0.13
130/130	1-Jun	56	63	853	855	900	910		916	916	MS	1.72	1.28	1.44	0.13
130/130	1-Jun	56	45	944	946	949	958		1003	1003	MS	1.79	1.32	1.51	0.15
130/130	1-Jun	56	51	944	946	949	958		1003	1003	MS	1.75	1.38	1.54	0.12
130/130	1-Jun	56	30	944	946	949	958		1003	1003	MS	1.75	1.31	1.49	0.12
130/130	1-Jun	56	63	944	946	949	958		1003	1003	MS	1.69	1.30	1.46	0.11
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**20 FSW**	**RS**	**OFF GAS**	**SYSYTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
130/130	1-Jun	57	59	1048	1050	1054	1105		1111	1111	MS	1.78	1.33	1.48	0.12
130/130	1-Jun	57	24	1048	1050	1054	1105		1111	1111	MS	1.81	1.39	1.54	0.12
130/130	1-Jun	57	9	1048	1050	1054	1105		1111	1111	MS	1.78	1.29	1.50	0.13
130/130	1-Jun	57	38	1048	1050	1054	1105		1111	1111	MS	1.71	1.30	1.43	0.10
130/130	1-Jun	57	59	1140	1141	1144	1153		1158	1158	MS	1.72	1.30	1.49	0.11
130/130	1-Jun	57	24	1140	1141	1144	1153		1158	1158	MS	1.81	1.39	1.59	0.13
130/130	1-Jun	57	9	1140	1141	1144	1153		1158	1158	MS	1.80	1.34	1.45	0.09
130/130	1-Jun	57	38	1140	1141	1144	1153		1158	1158	MS	1.95	1.31	1.48	0.13
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**20 FSW**	**RS**	**OFF GAS**	**SYSYTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
130/130	5-Jun	59	81	859	900	904	915		920	920	MS	1.76	1.28	1.48	0.15
130/130	5-Jun	59	76	859	900	904	915		920	920	MS	1.71	1.27	1.43	0.11
130/130	5-Jun	59	47	859	900	904	915		920	920	MS	1.78	1.28	1.46	0.12
130/130	5-Jun	59	21	859	900	904	915		920	920	MS	N/A	N/A	N/A	N/A
130/130	5-Jun	59	81	949	950	954	1002		1007	1008	MS	1.82	1.33	1.57	0.13
130/130	5-Jun	59	76	949	950	954	1002		1007	1008	MS	1.73	1.27	1.53	0.13

130/130	5-Jun	59	47	949	950	954	1002		1007	1008	MS	1.77	1.32	1.55	0.12
130/130	5-Jun	59	21	949	950	954	1002		1007	1008	MS	N/A	N/A	N/A	N/A

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
120/120	12-Jun	70	83	ABORT									MS	N/A	N/A	N/A	N/A
120/120	12-Jun	70	36	1400	1401	1404	1431			1435-38	1440	1440	MS	1.66	0.99	1.45	0.15
120/120	12-Jun	70	44	1400	1401	1404	1431			1435-38	1440	1440	MS	1.54	1.28	1.37	0.06
120/120	12-Jun	70	51	1400	1401	1404	1431			1435-38	1440	1440	MS	1.60	1.27	1.45	0.06
120/120	12-Jun	70	83	ABORT									MS	N/A	N/A	N/A	N/A
120/120	12-Jun	70	36	1508	1510	1513	1540			1544-1610	1612	1612	MS	1.74	1.34	1.46	0.06
120/120	12-Jun	70	44	1508	1510	1513	1540			1544-1610	1612	1612	MS	N/A	N/A	N/A	N/A
120/120	12-Jun	70	51	1508	1510	1513	1540			1544-1610	1612	1612	MS	1.71	1.35	1.51	0.07

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
120/120	13-Jun	72	24	1228	1229	1231	1259			1303-6	1307	1307	MS	1.67	1.30	1.44	0.07
120/120	13-Jun	72	45	1228	1229	1231	1259			1303-6	1307	1307	MS	1.73	1.26	1.38	0.08
120/120	13-Jun	72	28	1228	1229	1231	1259			1303-6	1307	1307	MS	1.91	1.23	1.40	0.10
120/120	13-Jun	72	38	1228	1229	1231	1259			1303-6	1307	1307	MS	1.59	1.22	1.39	0.08
120/120	13-Jun	72	24	1337	1337	1339	1407			1411-37	1438	1438	MS	2.14	1.36	1.48	0.07
120/120	13-Jun	72	45	1337	1337	1339	1407			1411-37	1438	1438	MS	1.56	1.32	1.40	0.04
120/120	13-Jun	72	28	1337	1337	1339	1407			1411-37	1438	1438	MS	2.36	1.26	1.47	0.16
120/120	13-Jun	72	38	1337	1337	1339	1407			1411-37	1438	1438	MS	1.66	1.32	1.42	0.07

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
120/120	14-Jun	74	21	1232	1234	1236	1304			1307-10	1312	1312	MS	1.87	1.41	1.51	0.05
120/120	14-Jun	74	22	1232	1234	1236	1304			1307-10	1312	1312	MS	1.96	1.28	1.43	0.07
120/120	14-Jun	74	50	1232	1234	1236	1304			1307-10	1312	1312	MS	1.85	1.46	1.62	0.10
120/120	14-Jun	74	5	1232	1234	1236	1304			1307-10	1312	1312	MS	1.89	1.20	1.40	0.06
120/120	14-Jun	74	21	1341	1342	1345	1412			1415-1441	1442	1443	MS	N/A	N/A	N/A	N/A
120/120	14-Jun	74	22	1341	1342	1345	1412			1415-1441	1442	1443	MS	N/A	N/A	N/A	N/A

120/120	14-Jun	74	50	1341	1342	1345	1412			1415-1441	1442	1443	MS	N/A	N/A	N/A	N/A
120/120	14-Jun	74	5	1341	1342	1345	1412			1415-1441	1442	1443	MS	N/A	N/A	N/A	N/A

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
120/120	15-Jun	76	37	1226	1229	1232	1259			1302-4	1306	1306	MS	1.69	1.29	1.44	0.07
120/120	15-Jun	76	19	1226	1229	1232	1259			1302-5	1306	1306	MS	1.71	1.36	1.49	0.07
120/120	15-Jun	76	36	1226	1229	1232	1259			1302-6	1306	1306	MS	1.58	1.28	1.35	0.05
120/120	15-Jun	76	7	1226	1229	1232	1259			1302-7	1306	1306	MS	1.65	1.30	1.43	0.08
120/120	15-Jun	76	37	1335	1337	1340	1407			1411-37	1439	1439	MS	1.81	1.33	1.45	0.09
120/120	15-Jun	76	19	1335	1337	1340	1407			1411-37	1439	1439	MS	1.70	1.37	1.49	0.07
120/120	15-Jun	76	36	1335	1337	1340	1407			1411-37	1439	1439	MS	1.72	1.27	1.37	0.07
120/120	15-Jun	76	7	1335	1337	1340	1407			1411-37	1439	1439	MS	1.65	1.31	1.43	0.08

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
120/120	19-Jun	78	38	1211	1212	1214	1242			1246-49	1250	1250	MS	1.86	1.27	1.43	0.10
120/120	19-Jun	78	55	1211	1212	1214	1242			1246-49	1250	1250	MS	1.61	1.22	1.35	0.07
120/120	19-Jun	78	28	1211	1212	1214	1242			1246-49	1250	1250	MS	N/A	N/A	N/A	N/A
120/120	19-Jun	78	43	1211	1212	1214	1242			1246-49	1250	1250	MS	1.61	1.26	1.41	0.08
120/120	19-Jun	78	38	1319	1320	1322	1350			1354-1420	1421	1421	MS	1.81	1.36	1.49	0.08
120/120	19-Jun	78	55	1319	1320	1322	1350			1354-1420	1421	1421	MS	1.56	1.26	1.37	0.06
120/120	19-Jun	78	28	1319	1320	1322	1350			1354-1420	1421	1421	MS	N/A	N/A	N/A	N/A
120/120	19-Jun	78	43	1319	1320	1322	1350			1354-1420	1421	1421	MS	1.64	1.31	1.44	0.07

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
120/120	20-Jun	80	41	1220	1222	1224	1252			1256-58	1300	1300	MS	1.67	1.33	1.44	0.07
120/120	20-Jun	80	63	1220	1222	1224	1252			1256-58	1300	1300	MS	1.64	1.37	1.46	0.04
120/120	20-Jun	80	49	1220	1222	1224	1252			1256-58	1300	1300	MS	2.14	1.19	1.52	0.16
120/120	20-Jun	80	37	1220	1222	1224	1252			1256-58	1300	1300	MS	1.55	1.20	1.35	0.07
120/120	20-Jun	80	41	1329	1330	1332	1400			1404-30	1431	1431	MS	1.66	1.33	1.44	0.07
120/120	20-Jun	80	63	1329	1330	1332	1400			1404-30	1431	1431	MS	1.80	1.26	1.49	0.07
120/120	20-Jun	80	49	1329	1330	1332	1400			1404-30	1431	1431	MS	2.01	0.98	1.48	0.27
120/120	20-Jun	80	37	1329	1330	1332	1400			1404-30	1431	1431	MS	1.54	1.24	1.36	0.05

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
120/120	21-Jun	82	13	1306	1308	1311	1338			1342-46	1348	1348	MS	1.59	1.30	1.42	0.06
120/120	21-Jun	82	35	1306	1308	1311	1338			1342-46	1348	1348	MS	1.79	1.20	1.43	0.10
120/120	21-Jun	82	26	1306	1308	1311	1338			1342-46	1348	1348	MS	1.88	1.25	1.42	0.11
120/120	21-Jun	82	76	1306	1308	1311	1338			1342-46	1348	1348	MS	1.55	1.23	1.34	0.06
120/120	21-Jun	82	13	1415	1418	1421	1448			1452-1520	1522	1522	MS	1.88	1.39	1.52	0.11
120/120	21-Jun	82	35	1415	1418	1421	1448			1452-1520	1522	1522	MS	1.69	1.30	1.47	0.08
120/120	21-Jun	82	26	1415	1418	1421	1448			1452-1520	1522	1522	MS	1.96	1.31	1.46	0.10
120/120	21-Jun	82	76	1415	1418	1421	1448			1452-1520	1522	1522	MS	1.58	1.28	1.37	0.06

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
120/120	22-Jun	84	5	1155	1156	1158	1226			1230-34	1235	1235	MS	1.60	1.26	1.41	0.07
120/120	22-Jun	84	30	1155	1156	1158	1226			1230-34	1235	1235	MS	1.60	1.21	1.33	0.08
120/120	22-Jun	84	81	1155	1156	1158	1226			1230-34	1235	1235	MS	1.52	1.22	1.37	0.06
120/120	22-Jun	84	55	1155	1156	1158	1226			1230-34	1235	1235	MS	1.63	1.25	1.39	0.07
120/120	22-Jun	84	5	1304	1305	1307	1335			1339-1407	1408	1408	MS	1.99	1.40	1.54	0.13
120/120	22-Jun	84	30	1304	1305	1307	1335			1339-1407	1408	1408	MS	1.56	1.24	1.32	0.07
120/120	22-Jun	84	81	1304	1305	1307	1335			1339-1407	1408	1408	MS	1.87	1.31	1.42	0.07
120/120	22-Jun	84	55	1304	1305	1307	1335			1339-1407	1408	1408	MS	1.62	1.27	1.42	0.07

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	20-Jun	79	53	857	859	901	924			928-34	935	935	MS	1.83	1.27	1.43	0.10
140/140	20-Jun	79	50	857	859	901	924			928-34	935	935	MS	1.81	1.31	1.47	0.13
140/140	20-Jun	79	47	857	859	901	924			928-34	935	935	MS	1.69	1.10	1.46	0.11
140/140	20-Jun	79	48	857	859	901	924			928-34	935	935	MS	1.89	1.10	1.39	0.12

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	20-Jun	79	53	1005	1006	1009	1031		1034-8	1038-1107	1108	1108	MS	2.61	1.30	1.48	0.15
140/140	20-Jun	79	50	1005	1006	1009	1031		1034-8	1038-1107	1108	1108	MS	1.83	1.39	1.50	0.09
140/140	20-Jun	79	47	1005	1006	1009	1031		1034-8	1038-1107	1108	1108	MS	1.71	1.33	1.46	0.09

140/140	20-Jun	79	48	1005	1006	1009	1031		1034-8	1038-1107	1108	1108	MS	1.75	1.28	1.43	0.11

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	21-Jun	81	44	951	952	955	1017			1022-26	1031	1031	MS	N/A	N/A	N/A	N/A
140/140	21-Jun	81	32	951	952	955	1017			1022-26	1031	1031	MS	N/A	N/A	N/A	N/A
140/140	21-Jun	81	47	951	952	955	1017			1022-26	1031	1031	MS	1.69	1.10	1.41	0.08
140/140	21-Jun	81	1	951	952	955	1017			1022-26	1031	1031	MS	1.83	1.10	1.45	0.14

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	21-Jun	81	44	1058	1101	1104	1126		1130-4	1135-1205	1207	1207	MS	1.76	1.29	1.47	0.12
140/140	21-Jun	81	32	1058	1101	1104	1126		1130-4	1135-1205	1207	1207	MS	1.73	1.32	1.44	0.10
140/140	21-Jun	81	47	1058	1101	1104	1126		1130-4	1135-1205	1207	1207	MS	2.02	1.36	1.47	0.09
140/140	21-Jun	81	1	1058	1101	1104	1126		1130-4	1135-1205	1207	1207	MS	2.01	1.32	1.48	0.14

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	22-Jun	83	38	848	848	851	913			918-26	927	927	MS	1.73	1.28	1.46	0.11
140/140	22-Jun	83	24	848	848	851	913			918-26	927	927	MS	1.65	1.23	1.38	0.09
140/140	22-Jun	83	9	848	848	851	913			918-26	927	927	MS	1.67	1.32	1.41	0.07
140/140	22-Jun	83	59	848	848	851	913			918-26	927	927	MS	1.71	1.28	1.41	0.10

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	22-Jun	83	38	956	957	1000	1022		1026-30	1031-1100	1102	1102	MS	1.77	1.31	1.50	0.10
140/140	22-Jun	83	24	956	957	1000	1022		1026-30	1031-1100	1102	1102	MS	1.79	1.31	1.44	0.07
140/140	22-Jun	83	9	956	957	1000	1022		1026-30	1031-1100	1102	1102	MS	1.66	1.40	1.48	0.05
140/140	22-Jun	83	59	956	957	1000	1022		1026-30	1031-1100	1102	1102	MS	1.87	1.33	1.48	0.13

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	26-Jun	85	49	842	844	848	909			913-19	920	920	MS	1.76	1.27	1.43	0.11
140/140	26-Jun	85	50	842	844	848	909			913-19	920	920	MS	2.01	1.26	1.49	0.15
140/140	26-Jun	85	63	842	844	848	909			913-19	920	920	MS	1.62	1.31	1.46	0.07

140/140	26-Jun	85	31	842	844	848	909			913-19	920	920	MS	1.51	1.10	1.35	0.07

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	26-Jun	85	49	953	954	957	1019		1022-25	1026-56	1057	1057	MS	1.93	1.32	1.51	0.13
140/140	26-Jun	85	50	953	954	957	1019		1022-25	1026-56	1057	1057	MS	2.09	1.26	1.56	0.18
140/140	26-Jun	85	63	953	954	957	1019		1022-25	1026-56	1057	1057	MS	1.68	1.38	1.49	0.06
140/140	26-Jun	85	31	953	954	957	1019		1022-25	1026-56	1057	1057	MS	1.59	1.19	1.32	0.09

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	26-Jun	86	55	1202	1204	1207	1229			1233-40	1241	1241	MS	1.64	1.22	1.37	0.10
140/140	26-Jun	86	48	1202	1204	1207	1229			1233-40	1241	1241	MS	1.73	1.23	1.40	0.13
140/140	26-Jun	86	36	1202	1204	1207	1229			1233-40	1241	1241	MS	1.81	1.33	1.51	0.11
140/140	26-Jun	86	12	1202	1204	1207	1229			1233-40	1241	1241	MS	2.21	1.25	1.44	0.17

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	26-Jun	86	55	1310	1311	1314	1336		1340-44	1344-1414	1415	1416	MS	1.84	1.12	1.38	0.12
140/140	26-Jun	86	48	1310	1311	1314	1336		1340-44	1344-1414	1415	1416	MS	1.73	1.16	1.39	0.12
140/140	26-Jun	86	36	1310	1311	1314	1336		1340-44	1344-1414	1415	1416	MS	1.89	1.09	1.47	0.11
140/140	26-Jun	86	12	1310	1311	1314	1336		1340-44	1344-1414	1415	1416	MS	2.06	1.31	1.48	0.15

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	27-Jun	87	85	ABORT									MS	N/A	N/A	N/A	N/A
140/140	27-Jun	87	61	918	919	925	944			948-54	956	956	MS	1.74	1.26	1.39	0.11
140/140	27-Jun	87	52	918	919	925	944			948-55	956	956	MS	1.71	1.24	1.35	0.10
140/140	27-Jun	87		ABORT										N/A	N/A	N/A	N/A

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	27-Jun	87	85	ABORT									MS	N/A	N/A	N/A	N/A
140/140	27-Jun	87	61	1025	1026	1030	1051		1054-56	1057-1127	1129	1129	MS	N/A	N/A	N/A	N/A
140/140	27-Jun	87	52	1025	1026	1030	1051		1054-56	1057-1127	1129	1129	MS	N/A	N/A	N/A	N/A

140/140	27-Jun												MS	N/A	N/A	N/A	N/A
DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	27-Jun	88	5	1248	1249	1252	1314			1319-26	1327	1327	MS	N/A	N/A	N/A	N/A
140/140	27-Jun	88	22	1248	1249	1252	1314			1319-26	1327	1327	MS	N/A	N/A	N/A	N/A
140/140	27-Jun	88	86	1248	1249	1252	1314			1319-26	1327	1327	MS	N/A	N/A	N/A	N/A
140/140	27-Jun	88	51	1248	1249	1252	1314			1319-26	1327	1327	MS	N/A	N/A	N/A	N/A
DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	27-Jun	88	5	1355	1357	1359	1422		1426-29	1430-1500	1502	1502	MS	1.65	1.21	1.35	0.09
140/140	27-Jun	88	22	1355	1357	1359	1422		1426-29	1430-1500	1502	1502	MS	2.00	1.31	1.55	0.19
140/140	27-Jun	88	86	1355	1357	1359	1422		1426-29	1430-1500	1502	1502	MS	1.93	1.31	1.56	0.11
140/140	27-Jun	88	51	1355	1357	1359	1422		1426-29	1430-1500	1502	1502	MS	1.76	1.20	1.39	0.11
DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	28-Jun	89	30	ABORT									MS	N/A	N/A	N/A	N/A
140/140	28-Jun	89	87	859	901	903	926			930-938	939	939	MS	N/A	N/A	N/A	N/A
140/140	28-Jun	89	1	859	901	903	926			930-938	939	939	MS	N/A	N/A	N/A	N/A
140/140	28-Jun	89	24	859	901	903	926			930-938	939	939	MS	N/A	N/A	N/A	N/A
DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
140/140	28-Jun	89	30	ABORT									MS	N/A	N/A	N/A	N/A
140/140	28-Jun	89	87	1009	1009	1011	1034		1038-42	1042-1112	1113	1113	MS	N/A	N/A	N/A	N/A
140/140	28-Jun	89	1	1009	1009	1011	1034		1038-42	1042-1112	1113	1113	MS	N/A	N/A	N/A	N/A
140/140	28-Jun	89	24	1009	1009	1011	1034		1038-42	1042-1112	1113	1113	MS	N/A	N/A	N/A	N/A
DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYSTEM	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
160/160	7-Jun	65	60	857	859	903	924			929-45	946	946	MS	1.87	1.27	1.47	0.15
160/160	7-Jun	65	45	857	859	903	924			929-45	946	946	MS	1.87	1.29	1.47	0.14
160/160	7-Jun	65	51	857	859	903	924			929-45	946	946	MS	1.86	1.22	1.43	0.18

160/160	7-Jun	65	72	857	859	903	924			929-45	946	946	MS	1.90	1.22	1.48	0.16
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	7-Jun	65	60	1016	1016	1021	1041		1046-57	1057-1125	1126	1126	MS	1.90	1.33	1.52	0.15
160/160	7-Jun	65	45	1016	1016	1021	1041		1046-57	1057-1125	1126	1126	MS	1.88	1.31	1.45	0.15
160/160	7-Jun	65	51	1016	1016	1021	1041		1046-57	1057-1125	1126	1126	MS	1.93	1.31	1.50	0.18
160/160	7-Jun	65	72	1016	1016	1021	1041		1046-57	1057-1125	1126	1126	MS	2.25	1.32	1.50	0.18
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	7-Jun	66	38	1247	1249	1254	1314			1319-35	1337	1337	MS	1.85	1.33	1.51	0.13
160/160	7-Jun	66	22	1247	1249	1254	1314			1319-35	1337	1337	MS	1.92	1.30	1.49	0.15
160/160	7-Jun	66	28	1247	1249	1254	1314			1319-35	1337	1337	MS	1.75	1.29	1.42	0.09
160/160	7-Jun	66	63	1247	1249	1254	1314			1319-35	1337	1337	MS	1.80	1.30	1.42	0.12
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	7-Jun	66	38	1406	1407	1412	1432		1436-47	1448-1516	1517	1517	MS	1.89	1.35	1.50	0.13
160/160	7-Jun	66	22	1406	1407	1412	1432		1436-47	1448-1516	1517	1517	MS	2.01	1.38	1.52	0.13
160/160	7-Jun	66	28	1406	1407	1412	1432		1436-47	1448-1516	1517	1517	MS	1.79	1.30	1.39	0.07
160/160	7-Jun	66	63	1406	1407	1412	1432		1436-47	1448-1516	1517	1517	MS	1.70	1.30	1.43	0.10
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	8-Jun	67	82	850	855	900	920			925-41	942	942	MS	1.85	1.27	1.43	0.13
160/160	8-Jun	67	38	850	855	900	920			925-42	942	942	MS	1.81	1.29	1.49	0.13
160/160	8-Jun	67	73	850	855	900	920			925-43	942	942	MS	2.07	1.26	1.43	0.13
160/160	8-Jun	67	75	850	855	900	920			925-44	942	942	MS	1.85	1.22	1.46	0.14
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	8-Jun	67	82	1011	1012	1016	1037		1041-52	1053-1121	1122	1123	MS	1.97	1.32	1.49	0.12
160/160	8-Jun	67	38	1011	1012	1016	1037		1041-52	1053-1121	1122	1123	MS	1.91	1.30	1.48	0.17
160/160	8-Jun	67	73	1011	1012	1016	1037		1041-52	1053-1121	1122	1123	MS	1.94	1.31	1.48	0.16

160/160	8-Jun	67	75	1011	1012	1016	1037		1041-52	1053-1121	1122	1123	MS	1.96	1.38	1.55	0.16
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	8-Jun	68	81	1224	1225	1230	1250			1256-1312	1313	1313	MS	1.85	1.29	1.47	0.15
160/160	8-Jun	68	53	1224	1225	1230	1250			1256-1312	1313	1313	MS	1.78	1.27	1.43	0.13
160/160	8-Jun	68	48	1224	1225	1230	1250			1256-1312	1313	1313	MS	1.73	1.30	1.44	0.12
160/160	8-Jun	68	5	1224	1225	1230	1250			1256-1312	1313	1313	MS	1.94	1.32	1.52	0.17
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	8-Jun	68	81	ABORT									MS	N/A	N/A	N/A	N/A
160/160	8-Jun	68	53	ABORT									MS	N/A	N/A	N/A	N/A
160/160	8-Jun	68	48	ABORT									MS	N/A	N/A	N/A	N/A
160/160	8-Jun	68	5	ABORT									MS	N/A	N/A	N/A	N/A
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	12-Jun	69	1	1005	1008	1011	1033			1038-54	1056	1056	MS	1.85	1.33	1.47	0.12
160/160	12-Jun	69	79	1005	1008	1011	1033			1038-54	1056	1056	MS	1.87	1.33	1.49	0.13
160/160	12-Jun	69	67	1005	1008	1011	1033			1038-54	1056	1056	MS	N/A	N/A	N/A	N/A
160/160	12-Jun	69	3	1005	1008	1011	1033			1038-54	1056	1056	MS	1.93	1.23	1.51	0.18
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	12-Jun	69	1	1124	1127	1131	1152	1157-8	1159-1211	1212-1240	1242	1242	MS	1.93	1.36	1.50	0.14
160/160	12-Jun	69	79	1124	1127	1131	1152	1157-8	1159-1211	1212-1240	1242	1242	MS	2.09	1.32	1.54	0.20
160/160	12-Jun	69	67	1124	1127	1131	1152	1157-8	1159-1211	1212-1240	1242	1242	MS	1.85	1.36	1.52	0.13
160/160	12-Jun	69	3	1124	1127	1131	1152	1157-8	1159-1211	1212-1240	1242	1242	MS	N/A	N/A	N/A	N/A
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**

160/160	13-Jun	71	84	ABORT									MS	N/A	N/A	N/A	N/A
160/160	13-Jun	71	30	903	905	908	930			934-36	953	953	MS	1.90	1.30	1.51	0.16
160/160	13-Jun	71	83	903	905	908	930			934-36	953	953	MS	1.82	1.23	1.51	0.16
160/160	13-Jun	71	59	903	905	908	930			934-36	953	953	MS	2.27	1.23	1.59	0.19
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	13-Jun	71	84	ABORT									MS	N/A	N/A	N/A	N/A
160/160	13-Jun	71	30	1022	1023	1026	1048	1053-4	1054-1106	1106-34	1136	1136	MS	1.85	1.34	1.47	0.13
160/160	13-Jun	71	83	1022	1023	1026	1048	1053-4	1054-1106	1106-34	1136	1136	MS	1.95	1.29	1.46	0.17
160/160	13-Jun	71	59	1022	1023	1026	1048	1053-4	1054-1106	1106-34	1136	1136	MS	1.88	1.31	1.46	0.15
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	14-Jun	73	41	843	844	847	909			914-30	932	932	MS	1.97	1.30	1.52	0.15
160/160	14-Jun	73	63	843	844	847	909			914-30	932	932	MS	2.18	1.29	1.48	0.15
160/160	14-Jun	73	55	843	844	847	909			914-30	932	932	MS	1.88	1.23	1.47	0.16
160/160	14-Jun	73	49	843	844	847	909			914-30	932	932	MS	1.97	1.23	1.44	0.12
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	14-Jun	73	41	1001	1002	1005	1027	1031-32	1032-44	1045-1113	1114	1114	MS	1.89	1.31	1.47	0.13
160/160	14-Jun	73	63	1001	1002	1005	1027	1031-32	1032-44	1045-1113	1114	1114	MS	2.72	1.34	1.76	0.29
160/160	14-Jun	73	55	1001	1002	1005	1027	1031-32	1032-44	1045-1113	1114	1114	MS	1.91	1.29	1.45	0.16
160/160	14-Jun	73	49	1001	1002	1005	1027	1031-32	1032-44	1045-1113	1114	1114	MS	1.87	1.34	1.49	0.13
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	15-Jun	75	79	856	859	903	924			929-45	947	947	MS	N/A	N/A	N/A	N/A

160/160	15-Jun	75	1	856	859	903	924			929-45	947	947	MS	N/A	N/A	N/A	N/A
160/160	15-Jun	75	44	856	859	903	924			929-45	947	947	MS	N/A	N/A	N/A	N/A
160/160	15-Jun	75	54	856	859	903	924			929-45	947	947	MS	N/A	N/A	N/A	N/A
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	15-Jun	75	79	1015	1017	1021	1042		1047-59	1100-28	1130	1130	MS	N/A	N/A	N/A	N/A
160/160	15-Jun	75	1	1015	1017	1021	1042		1047-59	1100-28	1130	1130	MS	N/A	N/A	N/A	N/A
160/160	15-Jun	75	44	1015	1017	1021	1042		1047-59	1100-28	1130	1130	MS	N/A	N/A	N/A	N/A
160/160	15-Jun	75	54	1015	1017	1021	1042		1047-59	1100-28	1130	1130	MS	N/A	N/A	N/A	N/A
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	19-Jun	77	59	847	848	851	913			918-34	935	935	MS	1.81	1.36	1.49	0.08
160/160	19-Jun	77	45	847	848	851	913			918-34	935	935	MS	1.56	1.26	1.37	0.06
160/160	19-Jun	77	60	847	848	851	913			918-34	935	935	MS	1.64	1.31	1.44	0.07
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYSTEM**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160/160	19-Jun	77	59	1004	1005	1008	1030	1034-5	1036-48	1048-1116	1117	1117	MS	1.91	1.34	1.50	0.14
160/160	19-Jun	77	45	1004	1005	1008	1030	1034-5	1036-48	1048-1116	1117	1117	MS	1.86	1.40	1.53	0.02
160/160	19-Jun	77	60	1004	1005	1008	1030	1034-5	1036-48	1048-1116	1117	1117	MS	1.84	1.34	1.48	0.13

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	50 FSW	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYS	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
130	7-Feb	3	28	1040	1043	1047	1113				1117	1129	1129	NGA	1.90	1.32	1.48	0.13
130	7-Feb	3	23	1040	1043	1047	1113				1117	1129	1129	NGA	1.68	1.30	1.41	0.10
130	7-Feb	3	51	1040	1043	1047	1113				1117	1129	1129	NGA	1.94	1.35	1.55	0.18
130	7-Feb	3	12	ABORT										NGA	N/A	N/A	N/A	N/A
130	7-Feb	4	19	1326	1329	1333	1359				1403	1415	1415	NGA	1.79	1.33	1.46	0.11
130	7-Feb	4	45	ABORT										NGA	1.88	1.29	1.54	0.12
130	7-Feb	4	55	1326	1329	1333	1359				1403	1415	1415	NGA	2.06	1.34	1.56	0.21
130	7-Feb	4	22	1326	1329	1333	1359				1403	1415	1415	NGA	N/A	N/A	N/A	N/A
DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	50 FSW	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYS	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
130	15-Feb	14	1	1246	1247	1251	1317				1322-32	1334	1334	NGA	N/A	N/A	N/A	N/A
130	15-Feb	14	58	1246	1247	1251	1317				1322-32	1334	1334	NGA	N/A	N/A	N/A	N/A
130	15-Feb	14	12	1246	1247	1251	1317				1322-32	1334	1334	NGA	N/A	N/A	N/A	N/A
130	15-Feb	14	42	1246	1247	1251	1317				1322-32	1334	1334	NGA	N/A	N/A	N/A	N/A
DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	50 FSW	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYS	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
130	16-Feb	16	22	1242	1242	1246	1312				1316-26	1327	1327	NGA	N/A	N/A	N/A	N/A
130	16-Feb	16	60	1242	1242	1246	1312				1316-26	1327	1327	NGA	N/A	N/A	N/A	N/A
130	16-Feb	16	55	1242	1242	1246	1312				1316-26	1327	1327	NGA	N/A	N/A	N/A	N/A
130	16-Feb	16	35	1242	1242	1246	1312				1316-26	1327	1327	NGA	N/A	N/A	N/A	N/A
DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	50 FSW	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYS	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
130	17-Feb	18	41	1230	1231	1235	1304				1305-15	1316	1317	NGA	N/A	N/A	N/A	N/A
130	17-Feb	18	5	1230	1231	1235	1304				1305-15	1316	1317	NGA	N/A	N/A	N/A	N/A
130	17-Feb	18	21	1230	1231	1235	1304				1305-15	1316	1317	NGA	N/A	N/A	N/A	N/A
130	17-Feb	18	61	1230	1231	1235	1304				1305-15	1316	1317	NGA	N/A	N/A	N/A	N/A
DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	50 FSW	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYS	PO2 MAX	PO2 MIN	PO2 AVG	STDEV

130	17-Feb	19	28	1401	1403	1407	1433				1438-48	1449	1449	NGA	2.07	1.34	1.49	0.17
130	17-Feb	19	62	1401	1403	1407	1433				1438-48	1449	1449	NGA	1.74	1.29	1.44	0.08
130	17-Feb	19	49	1401	1403	1407	1433				1438-48	1449	1449	NGA	1.69	1.27	1.36	0.09
130	17-Feb	19	51	1401	1403	1407	1433				1438-48	1449	1449	NGA	1.69	1.30	1.39	0.05
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
130	24-Feb	25	43	1300	1301	1305	1332				1336-46	1347	1348	NGA	1.78	1.30	1.42	0.10
130	24-Feb	25	21	1300	1301	1305	1332				1336-46	1347	1348	NGA	1.82	1.34	1.44	0.10
130	24-Feb	25	32	1300	1301	1305	1332				1336-46	1347	1348	NGA	1.73	1.29	1.40	0.11
130	24-Feb	25	5	1300	1301	1305	1332				1336-46	1347	1348	NGA	1.77	1.31	1.42	0.11
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
130	13-Mar	27	16	1347	1349	1353	1419				1424-34	1436	1437	NGA	2.07	1.37	1.56	0.21
130	13-Mar	27	43	1347	1349	1353	1419				1424-34	1436	1437	NGA	1.57	1.30	1.41	0.05
130	13-Mar	27	55	1347	1349	1353	1419				1424-34	1436	1437	NGA	1.85	1.33	1.47	0.12
130	13-Mar	27	2	1347	1349	1353	1419				1424-34	1436	1437	NGA	1.63	1.33	1.43	0.05
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
130	14-Mar	29	ABT											N/A	N/A	N/A	N/A	N/A
130	14-Mar	29	45	1137	1138	1141	1208				1222-23	1224	1225	NGA	1.86	1.30	1.41	0.11
130	14-Mar	29	22	1137	1138	1141	1208				1222-23	1224	1225	NGA	1.73	1.32	1.44	0.07
130	14-Mar	29	51	1137	1138	1141	1208				1222-23	1224	1225	NGA	2.01	1.35	1.46	0.10
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160	20-Mar	34	9	1144	1145	1150	1215			1220-2	1222-45	1246	1246	NGA	1.34	1.09	1.31	0.05
160	20-Mar	34	43	1144	1145	1150	1215			1220-2	1222-45	1246	1246	NGA	1.46	1.30	1.43	0.03
160	20-Mar	34	28	1144	1145	1150	1215			1220-2	1222-45	1246	1246	NGA	1.39	1.29	1.37	0.02
160	20-Mar	34	60	1144	1145	1150	1215			1220-2	1222-45	1246	1246	NGA	1.45	1.07	1.35	0.08
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**

160	21-Mar	36	5	1118	1120	1124	1150			1155-57	1157-20	1221	1222	NGA	1.42	1.18	1.39	0.05
160	21-Mar	36	30	1118	1120	1124	1150			1155-57	1157-20	1221	1222	NGA	1.39	1.05	1.32	0.08
160	21-Mar	36	19	1118	1120	1124	1150			1155-57	1157-20	1221	1222	MS	N/A	N/A	N/A	N/A
160	21-Mar	36	19	1118	1120	1124	1150			1155-57	1157-20	1221	1222	MS	1.42	1.17	1.37	0.03
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160	21-Mar	37	35	1306	1308	1312	1338			1343-45	1345-1408	1409	1409	NGA	1.97	1.38	1.53	0.15
160	21-Mar	37	59	1306	1308	1312	1338			1343-45	1345-1408	1409	1409	NGA	1.88	1.37	1.53	0.15
160	21-Mar	37	52	1306	1308	1312	1338			1343-45	1345-1408	1409	1409	MS	1.86	1.36	1.49	0.11
160	21-Mar	37	21	1306	1308	1312	1338			1343-45	1345-1408	1409	1409	MS	1.89	1.32	1.45	0.13
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160	22-Mar	39	16	1218	1220	1225	1250			1255-57	1258-1321	1323	1323	NGA	1.86	1.34	1.49	0.12
160	22-Mar	39	32	1218	1220	1225	1250			1255-57	1258-1321	1323	1323	NGA	1.98	1.38	1.56	0.14
160	22-Mar	39	2	1218	1220	1225	1250			1255-57	1258-1321	1323	1323	MS	1.63	1.35	1.44	0.05
160	22-Mar	39	14	1218	1220	1225	1250			1255-57	1258-1321	1323	1323	MS	1.55	1.37	1.45	0.04
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160	23-Mar	41	55	1106	1110	1116	1140			1147	1148-1210	1212	1212	NGA	1.61	1.39	1.47	0.05
160	23-Mar	41	45	ABORT	ABORT	ABORT	ABORT			ABORT	ABORT	ABORT	ABORT	NGA	1.82	1.13	1.28	0.23
160	23-Mar	41	28	1106	1110	1116	1140			1147	1148-1210	1212	1212	MS	1.71	1.35	1.46	0.07

160	23-Mar	41	70	1106	1110	1116	1140			1147	1148-1210	1212	1212	MS	1.60	1.36	1.48	0.05
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160	22-May	43	63	1353	1355	1400	1425			1430-2	1432-1455	1456	1457	MS	N/A	N/A	N/A	N/A
160	22-May	43	34	1353	1355	1400	1425			1430-2	1432-1455	1456	1457	MS	N/A	N/A	N/A	N/A
160	22-May	43	55	1353	1355	1400	1425			1430-2	1432-1455	1456	1457	MS	N/A	N/A	N/A	N/A
160	22-May	43	60	1353	1355	1400	1425			1430-2	1432-1455	1456	1457	MS	N/A	N/A	N/A	N/A
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
160	24-May	46	30	1212	1216	1221	1246			1252-4	1255-1318	1320	1321	MS	1.94	1.30	1.48	0.06
160	24-May	46	70	1212	1216	1221	1246			1252-4	1255-1318	1320	1321	MS	2.22	1.33	1.51	0.08
160	24-May	46	52	1212	1216	1221	1246			1252-4	1255-1318	1320	1321	MS	2.31	1.31	1.49	0.07
160	24-May	46	16	1212	1216	1221	1246			1252-4	1255-1318	1320	1321	MS	1.97	1.31	1.50	0.03
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
170	30-May	52	53	1425	1426	1432	1456		1500-1	1502-7	1507-31	1532	1532	MS	1.77	1.31	1.41	0.08
170	30-May	52	37	1425	1426	1432	1456		1500-1	1502-7	1507-31	1532	1532	MS	1.61	1.33	1.43	0.06
170	30-May	52	31	1425	1426	1432	1456		1500-1	1502-7	1507-31	1532	1532	MS	1.55	1.35	1.44	0.04
170	30-May	52	35	1425	1426	1432	1456		1500-1	1502-7	1507-31	1532	1532	MS	1.61	1.29	1.39	0.07
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
170	31-May	55	55	1426	1428	1433	1458		1503-4	1504-9	1510-34	1535	1535	MS	1.93	1.28	1.45	0.16
170	31-May	55	58	1426	1428	1433	1458		1503-4	1504-9	1510-34	1535	1535	MS	1.31	1.30	1.30	0.00

170	31-May	55	80	1426	1428	1433	1458		1503-4	1504-9	1510-34	1535	1535	MS	1.91	1.27	1.46	0.15
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
170	1-Jun	57	7	1252	1254	1259	1325		133-1	1331-6	1336-00	1402	1402	MS	2.48	1.27	1.47	0.16
170	1-Jun	57	33											MS	1.97	1.33	1.54	0.17
170	1-Jun	57	26	1252	1254	1259	1325		1331-1	1331-6	1336-00	1402	1402	MS	1.59	1.28	1.39	0.06
170	1-Jun	57	60	1252	1254	1259	1325		1331-1	1331-6	1336-00	1402	1402	MS	1.91	1.29	1.48	0.16
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
170	5-Jun	60	5	1052	1053	1100	1123		1128-9	1129-34	1135-59	1200	1200		1.98	1.37	1.55	0.13
170	5-Jun	60	62	1052	1053	1100	1123		1128-10	1129-35	1135-60	1200	1200	MS	2.08	1.32	1.49	0.17
170	5-Jun	60	50	1052	1053	1100	1123		1128-11	1129-36	1135-61	1200	1200	MS	1.90	1.31	1.45	0.14
170	5-Jun	60	16	1052	1053	1100	1123		1128-12	1129-37	1135-62	1200	1200	MS	N/A	N/A	N/A	N/A
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
170	5-Jun	61	31	1305	1307	1311	1337		1341-2	1343-8	1348-1412	1413	1414	MS	1.84	1.34	1.46	0.10
170	5-Jun	61	53	1305	1307	1311	1337		1341-2	1343-8	1348-1412	1413	1414	MS	1.81	1.26	1.43	0.12
170	5-Jun	61	80	1305	1307	1311	1337		1341-2	1343-8	1348-1412	1413	1414	MS	2.03	1.51	1.68	0.14
DIVE PROFILE	**DATE**	**DIVE #**	**DVR #**	**ON GAS**	**LS**	**RB**	**LB**	**50 FSW**	**40 FSW**	**30 FSW**	**20 FSW**	**RS**	**OFF GAS**	**SYS**	**PO2 MAX**	**PO2 MIN**	**PO2 AVG**	**STDEV**
170	6-Jun	62	1	856	901	907	931		936-7	938-43	944-1008	1010	1011	MS	1.93	1.32	1.49	0.12
170	6-Jun	62	46	856	901	907	931		936-7	938-43	944-1008	1010	1011	MS	1.83	1.30	1.46	0.12
170	6-Jun	62	67	856	901	907	931		936-7	938-43	944-1008	1010	1011	MS	1.94	1.25	1.51	0.19
170	6-Jun	62	79	856	901	907	931		936-7	938-43	944-1008	1010	1011	MS	1.93	1.29	1.51	0.17

DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	50 FSW	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYS	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
170	6-Jun	63	18	1112	1115	1121	1145		1150-1	1152-7	1158-1221	1222	1222	MS	1.80	1.31	1.52	0.11
170	6-Jun	63	35	1112	1115	1121	1145		1150-1	1152-7	1158-1221	1222	1222	MS	1.83	1.27	1.45	0.15
170	6-Jun	63	71	1112	1115	1121	1145		1150-1	1152-7	1158-1221	1222	1222	MS	1.94	1.32	1.51	0.16
170	6-Jun	63	3	1112	1115	1121	1145		1150-1	1152-7	1158-1221	1222	1222	MS	1.93	1.29	1.49	0.20
DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	50 FSW	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYS	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
170	6-Jun	64	12	1308	1310	1315	1340		1344-4	1346-51	1351	1416	1416	MS	2.01	1.39	1.55	0.17
170	6-Jun	64	55	1308	1310	1315	1340		1344-4	1346-51	1351	1416	1416	MS	1.99	1.32	1.50	0.18
170	6-Jun	64	44	1308	1310	1315	1340		1344-4	1346-51	1351	1416	1416	MS	1.98	1.28	1.49	0.20
170	6-Jun	64	36	1308	1310	1315	1340		1344-4	1346-51	1351	1416	1416	MS	1.90	1.30	1.48	0.15
DIVE PROFILE	DATE	DIVE #	DVR #	ON GAS	LS	RB	LB	50 FSW	40 FSW	30 FSW	20 FSW	RS	OFF GAS	SYS	PO2 MAX	PO2 MIN	PO2 AVG	STDEV
190	24-Feb	23	55	1255	1257	1302	1322	1328	1329-32	1332-35	1335-59	1400	1400	NGA	2.42	1.36	1.94	0.32
190	24-Feb	23	24	1255	1257	1302	1322	1328	1329-32	1332-35	1335-59	1400	1500	NGA	2.05	1.31	1.59	0.22
190	24-Feb	23	51	1255	1257	1302	1322	1328	1329-32	1332-35	1335-59	1400	1600	NGA	2.22	1.39	1.71	0.25
190	24-Feb	23	9	1255	1257	1302	1322	1328	1329-32	1332-35	1335-59	1400	1700	NGA	2.26	1.35	1.68	0.28

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APPENDIX C

SPECIFIC COMMENTS ABOUT THE DIVES PERFORMED

Dive #	Comment
1	Uneventful dive.
2	Uneventful dive.
3	Diver #12 aborted due to rig failure, Diver #28 and #51 felt "tired" after dive.
4	Diver #45 aborted due to rig failure.
5	Uneventful dive.
6	Diver #48 had a hold on descent, he aborted due to ear squeeze.
7	Diver #42 had a hold on descent, he aborted due to sinus squeeze.
8	Diver #52 had a hold on descent, he aborted due to ear squeeze.
9	Diver #31 had a hold on descent, he aborted due to ear squeeze.
10	Uneventful dive.
11	Diver #5, Diver #27, Diver #32 had holds on descent, all aborted due to ear squeezes.
12	Diver #57 had a hold on descent, he did complete the dive.
13	Uneventful dive.
14	Uneventful dive, but NGA did not function for rigs #2 and #4.
15	Uneventful dive.
16	Diver #35 had difficulty clearing, stuck his head out of the water on descent, Diver #55 felt "tired" that night, but felt fine the next day.
17	Diver #8 had difficulty clearing and aborted. Diver #17 had stiff neck and shoulder after playing softball the next day. He was seen and evaluated by duty DMO and diagnosed as having muskulo-skeletal pain.
18	Uneventful dive.
19	Uneventful dive, diver #28 felt "tired" after dive.
20	Diver #10 had hold on descent, aborted due to ear squeeze. The hold on descent was greater than one minute, so the bottom times were recalculated to be 30 minutes for the first dive, 30 minutes for the second dive, and 34 minutes for the third dive.
21	Uneventful dive.
22	Diver #40 had difficulty clearing, aborted the dive. Diver #34 felt "tired" after the dive.
23	Uneventful dive.
24	Diver #64 experienced a "caustic cocktail", and aborted dive. He felt fine when reevaluated at 2 hours, 24 hours and 48 hours after the dive. Diver #65 noticed a rash on her left flank after the dive. She was seen and evaluated by duty DMO and it was determined not to be DCS.
25	Uneventful dive.
26	Diver #66 had a hold on descent, and he had to keep his head out of the water on descent in order to clear.
27	Uneventful dive. Diver #55 felt "tired" after the dive.

28	Diver #23 aborted the dive because of rig problem. He felt "tired" after the dive.
29	Uneventful dive.
30	Uneventful dive. Diver #59 had a headache the same night as the dive, but he went to sleep, and when he awoke the next day he felt fine.
31	Uneventful dive.
33	Uneventful dive.
33	Uneventful dive. Diver #55 had mild right knee pain the night of the dive. This had resolved by the time he awoke the next day. He attributed the pain to an injury incurred while climbing out of the trunk of the OSF after the dive.
34	Uneventful dive. Diver #55 felt "tired" the night of the dive, but felt fine when he awoke the next day.
35	Uneventful dive. The day afterwards diver #61 had some pain and parasthesias in the right shoulder after the dive. He was seen and evaluated by DMO. The medical report was as follows: This 43 y/o white male Navy Reservist presented with left shoulder pain following an experimental dive schedule using the MK 16 MOD 1 to 110 fsw/ 20 min, surface interval of 30 min, 110 fsw/17 min. This series is validating a decompression table for use with the MK 16 MOD 1 UBA, which uses a 1.3 ATA constant partial pressure of oxygen in nitrogen breathing gas mixture. The diver was then a tender on the surface for a following dive, in which he helped lift MK 16 MOD 1 UBAs out of the water and up a ladder. Afterwards he noted some vague discomfort with possibly some very mild numbness in the triceps, elbow, ring, and little fingers of the left extremity. Discomfort level was barely noticeable at about 0.5/10. The diver felt that this was musculoskeletal. The next morning, the diver awoke with point tenderness of the left shoulder, but not in the left arm itself. The pain was about a 1/10. The patient denied any recent obvious trauma to the left upper extremity, but did notice increased popping sounds in both shoulders when stretching during the dive at depth. The patient was alert and oriented to person, place, and time, cooperative, in good physical condition, and not in any acute distress. Mental status was appropriate. Cranial nerves were all intact on gross exam. Biceps, triceps, patellar, and ankle reflexes were normal bilaterally. Gait, rapid alternating movements of the hands, finger tracking, finger-to-nose, heel-shin, and Rhomberg were all normal. Muscle strengths in the deltoids, biceps, triceps, forearms, hands, hips, knees, and ankles were all normal bilaterally. The diver was intact to pinprick, light touch, and vibration for head, torso, and extremities. The diver had a 2 cm region of increased tenderness to light palpation over the left shoulder joint. There were no obvious deformity or color changes. Shoulders were symmetrical. The remainder of the exam was normal. The diver was treated on a Treatment Table 6 with no extensions. During the treatment the diver had no change in physical status on any neurological exam performed at depth. The pain remained constant. Upon

	surfacing, the pain was still present and was unchanged. In light of the unchanging nature of the pain, and the tenderness to palpation, the final diagnosis was left shoulder musculoskeletal pain, not decompression-related. The diver was given post treatment instructions, Motrin, and told to follow-up with the DMO if there was any worsening of his symptoms.
36	Uneventful dive. The day afterwards diver #10 had some parasthesias on the right calf. He was seen and evaluated by DMO, and the parasthesias were thought to be a result of muskuloskeletal injury or possibly peripheral nerve entrapment "possibly from sitting in meetings all morning". Patient was seen and evaluated by DMO, and his symptom's resolved within a few hours.
37	Diver #52 had a hold on descent due to problems clearing.
38	Uneventful dive.
39	Uneventful dive.
40	Uneventful dive.
41	Uneventful dive.
42	Diver #45 felt slightly lightheaded for a few minutes, but was able to continue the dive.
43	Uneventful dive.
44	There was a brief, less than one minute hold on descent during the second half of this dive. Otherwise, uneventful dive.
45	Diver #8 aborted due to ear squeeze and the dive team returned to the surface. The profile of the aborted dive was a five minute bottom time with a maximum depth of 27 fsw. Diver #63 was replaced with diver #31 and after 30 minutes the scheduled dive profile was completed as planned.
46	Uneventful dive.
47	Uneventful dive.
48	Uneventful dive.
49	Only three divers on this dive team, uneventful dive.
50	Divers #72 and #76 both breathed chamber air for less than one minute to evaluate "gurgling" noise in rig, which was determined to be insignificant, and dive was continued, Uneventful dive.
51	Uneventful dive.
52	Diver #37 had hold on descent at 34 fsw, was less than one minute, otherwise Uneventful dive.
53	Uneventful dive.
54	Diver # 78 had some leg cramps while on the bike, this resolved with rest, was evaluated during surface interval by DMO and determined to be musculo-skeletal pain. The dive was continued, otherwise uneventful dive.
55	Only three divers were on dive team.
56	Uneventful dive.
57	Uneventful dive.
58	Diver #7 had a flooded rig and aborted dive.
59	Uneventful dive.
60	Uneventful dive.
61	Only three divers were on dive team.

62	Uneventful dive.
63	Uneventful dive.
64	Uneventful dive.
65	Diver #72's rig may have had the diluent add valve stuck open, rig evaluated by EOD.
66	Diver #63's rig may have had the diluent add valve stuck open, rig evaluated by EOD.
67	Diver #38 had to put head out of water to clear.
68	The second half of this dive profile was aborted due to a sinus squeeze suffered by diver #53.
69	Uneventful dive. Gas sampling system malfunctioned, only valid data is from diver #3.
70	Uneventful dive. Gas sampling system malfunctioned, only valid data is from divers # 36 and #51.
71	Diver #84 had problems with the rig, aborted dive.
72	Uneventful dive.
73	Uneventful dive. Diver #63 noted to be adding oxygen on the bottom
74	Hold diver #50 on descent due to "bad taste," diver aborted.
75	Diver #79 developed skin mottling left upper arm approximately 3.5 hours after dive. He was seen and evaluated by DMO, diagnosed with cutis marmarota, and treated for DCS. His symptoms resolved during his first oxygen period at 60 fsw, was treated with TT5 with full recovery.
76	Diver #7 developed a rash on his abdomen about 4 hours after completing dive profile. He was seen and evaluated by DMO, it was decided to observe him, at about 0430 the next day he developed pain in his left shoulder, was diagnosed with DCS. He was treated with a TT6 with full recovery.
77	Diver #45 developed neck pain after dive, was seen and evaluated by DMO, treated with TT6. It was ultimately decided after reviewing the case with several DMOs that this was a musculo-skeletal injury.
78	Uneventful dive.
79	Uneventful dive.
80	Diver #41 noted pain and numbness in left hand during decompression stop, which rapidly worsened while on the surface. He was seen and evaluated by DMO, then treated with TT6 with full recovery.
	As a result of the three cases of DCS in Divers #79, #7 and #41 in Dives 75, 76 and 80, respectively, schedules for subsequent dives were recalculated assuming that the divers breathed 1.25 ATA PO_2 during periods in which it had been previously assumed 1.3 ATA PO2 was breathed.
81	Uneventful dive.
82	Uneventful dive.
83	Diver #59's rig flooded, and he aborted the dive.
84	Uneventful dive.

85	Diver #31 had hold less than one minute at 20 fsw, nosepiece fell out of rig, so cleared on descent with head up out of the water. Diver #31's rig maintained a PO_2 of about 0.8 ATA during the decompression stop in the first half of the dive, so a different rig was used by the diver during the second half of the dive. Diver #31 had right arm and shoulder pain after the dive, but this was provoked by positioning the arm (reaching back and inverted), in a manner similar to that required to push the manual oxygen valve on the MK 16 MOD 1 rig, which diver #31 had been doing for much of the first half of the dive profile.
86	Uneventful dive.
87	There were only three divers on this dive team, and diver #1 and diver #4 had holds on descent. Diver #1 had difficulty breathing rig, and aborted the dive
88	Uneventful dive.
89	Diver #30 had episode of feeling "dizzy" for 2 or 3 minutes during first half of the dive, so aborted. He soon felt better, and was asymptomatic on the surface.

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APPENDIX D

DIVER INSPIRED GAS ANALYSIS

Gas sampling was performed throughout the study to measure diver inspired gas. A Rosemount 2000 New Gas Analyzer (NGA) (La Haba, CA) was used for the first 152 man-dives (33 OSF pressurizations) and mass spectrometers were used for the remaining dives. The sampled gas was transported from a sampling port in the base of the MK 16 MOD 1 inhalation hose to the gas analyzer on the OSF Med Deck through 110 feet of 0.032 inch inner diameter nylon tubing. Initially, the rate of gas sample flow was regulated on the surface using a flowmeter with a fixed orifice. The NGA with this gas sampling system reliably measured the PO_2 when the diver was at a steady depth greater than about 20 fsw. However, the PO_2 values were unreliable during periods of ascent and descent and at depths less than about 20 fsw because the gas sample flow through the fixed orifice varied between these different conditions. As a result, it became impossible to reliably synchronize measured diver pressure and inspired O_2 fraction to compute diver inspired PO_2. Because it was critical to measure the PO_2 on descent, gas sample flows were regulated at aproximately 125 ml/min with an adjustable flow metering valve during the second half of the study. In addition, four mass spectrometers, one for each diver, were used instead of the NGA to take advantage of the reduced response times afforded by these analyzers.

NGA GAS SAMPLING SYSTEM

For the first half of the study a Rosemount New Gas Analyzer (NGA) 2000 was used to analyze the sample gas. The product of measured diver depth and inspired O_2 fraction yielded instantaneous diver inspired PO_2. While the measured diver depth was obtained in real-time without appreciable time delay, measured inspired FO_2 values had to be corrected for the transit delay between the gas sample inlet at the diver and the gas analyzer on the Med Deck. This transit delay, and the analyzer 0-95% response time, were determined as follows: the OSF was pressurized to various depths with the sampling system drawing pure nitrogen from a steady flow of nitrogen over the inlet of the gas sampling tube. At each depth, a valve was then manually switched to open the sample inlet to a flow of 100% oxygen from a calibrated syringe maintained at a pressure slightly greater than chamber pressure. Syringe pressure was monitored with an electronic pressure tranducer that registered the pressure change at the instant the valve was switched, providing an exact time for the nitrogen-to-oxygen switch at the gas sample inlet. The NGA detected the oxygen several seconds later. The difference in time between the nitrogen-to-oxygen switch at the sample inlet and first detection of O_2 by the NGA was the sampling latency time. The time between the initial detection of oxygen and the 95% full-scale response was the NGA response time. The latency and response times

were measured six times at depths between 80 and 190 fsw. When the OSF remained at a depth of 80 fsw or greater and a steady state was reached, the NGA system had a 79 sec (±4.7 S.D.) combined latency and response time. Measured depth and FO_2 values were time synchronized by time-shifting the latter by an amount equal to the combined sampling latency and analyzer response time. Separate accommodation of analyzer sampling latency with signal deconvolution for analyzer 0-95% response time[1] was not considered necessary.

MASS SPECTROMETER GAS SAMPLING SYSTEM

Four mass spectrometers, two Extrel MS 250 Gas Analyzers (Extrel Corporation, Pittsburgh, PA) and two Medical Gas 1000 Analyzer (Marquette Electronics, Milwaukee, WI) were used to analyze diver inspired gas in the second part of the study. The gas sample rate was maintained at 125 ± 5 ml/minute using an adjustable metering valve and flowmeter at the surface. The sampling latency and analyzer response times were measured at depths from 80 to 190 fsw 38 times in the same fashion as for the NGA system. Results for the sample lines to each of the four mass spectrometers are given in Table D-1. The overall summed latency and response times averaged 32.5 seconds (standard deviation of 1.2 seconds), and did not vary appreciably at depths from 80 fsw to 190 fsw. Measured depth and FO_2 values were time synchronized using these combined latencies and response times as described above for the NGA system.

Table D-1. Combined Gas Sampling Latencies and Mass Spectrometer Response Times

Depth (fsw)	Latency + Response Time (sec)* MS #1	MS #2	MS #3	MS #4
190	29.5	29.5	35.5	30.5
				31.1
170	30.1	31.1	36.0	29.0
				30.7
150	28.9	28.9	38.9	31.9
	27.9	28.9	40.9	31.9
140	28.0	28.0	42.0	30.0
	28.0	28.0	41.0	29.9
120	29.5	28.5	41.5	29.5
100	31.3	29.3	46.3	32.3
80	37.8	28.8	36.8	31.8
Mean	30.1	29.0	39.9	30.8
StdDev	3.1	0.9	3.5	1.1
Combined:				
Mean	32.5			
StdDev	1.3			

* 120-130 ml/min sample flow rate

The NGA and the mass spectrometer systems were calibrated each day that they were used using zero and full-span calibration gases. The flow rates were monitored throughout the dive to ensure that they remained at 125 ml/minute. The oxygen in the gas samples was within the detection limits of the mass spectrometer and they have a linear response in the range of gas concentrations measured in this study[2,3].

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1. Gerth, W. A., Vann, R. D., Leatherman, N. E., Feezor M. D. "Effects of Microgravity on Tissue Perfusion and the Efficacy of Astronaut Denitrogenation for EVA." *Aviation, Space and Environmental Medicine*, 58 (9, Suppl.): A100-A105, 1987.

2. ABB Extrel, *Questor GP Operator's Manual: Smartware and Hardware*, ABB Extrel, Pittsburgh, PA, 1998, pp 1-2..

3. Marquette Electronics, *MGA 1100 Medical Gas Analyzer Operating and Maintenance Instructions*, Marquette Electronics, Marquette, Milwaukee, WI, 1993, pp 1-2.

APPENDIX E

OXYGEN TOXICITY OF DIVES PERFORMED

This appendix gives the estimated risk of CNS oxygen toxicity in divers for which inspired PO_2 data were available as obtained from either the Extrel or Marquette Electronics (ME) mass spectrometers (see Table E-1). Each profile was encoded in NMRI Standard Format[1] from the real-time record of inspired FO_2 and ambient pressure, each sampled at 2 sec intervals (30 Hz). Recorded O_2 fractions were time-shifted using the combined value of measured gas analyzer latency and response times to establish synchronicity of time and FO_2 values. (Separate accommodation of analyzer sampling latency with signal deconvolution for analyzer 0-95% response time[2] was not considered necessary for these analyses.) The autocatalytic model of Harabin, *et al.*[3], was then exercised on the profiles to obtain the tabulated results.

Each DIVE # in Table E-1 is the unique number created every time the OSF was pressurized to test a particular dive in this study. These correspond to the DIVE #s used elsewhere in this report to designate each dive. A given DIVE # may appear multiple times; once for each of up to four divers that participated in a given dive. The DIVE HEADER lists the date that the dive was performed, the dive-specific data file name, and the diver number (DRV#). $P_{CNS\text{-}TOX}$ % is the estimated risk of CNS oxygen toxicity for the particular dive and diver.

Note that a series of up to three dives, with intervening surface interval(s), could constitute a repetitive dive profile. Participation of a given diver in dives with consecutive DIVE #s on the same date indicates diver participation in a repetitive dive profile. However, in the present analysis, each dive by any given diver was analyzed independently of any other dives that the diver made in a profile.

Table E-1. Estimated Risks of CNS Oxygen Toxicity in Dives Performed

DIVE #	DIVE HEADER	$P_{CNS-TOX}$, %
43	Date:5/30/00SourceFile:E110530O.DATDRV4ME	0.29
45	Date:5/24/00SourceFile:D210524O.DATDRV1Extrel	0.27
45	Date:5/24/00SourceFile:D210524O.DATDRV2Extrel	0.32
45	Date:5/24/00SourceFile:D210524O.DATDRV3ME	0.25
45	Date:5/24/00SourceFile:D210524O.DATDRV4ME	0.24
46	Date:5/24/00SourceFile:J110524O.DATDRV1Extrel	0.82
46	Date:5/24/00SourceFile:J110524O.DATDRV2Extrel	1.28
46	Date:5/24/00SourceFile:J110524O.DATDRV3ME	0.86
46	Date:5/24/00SourceFile:J110524O.DATDRV4ME	0.88
47	Date:5/25/00SourceFile:D210525O.DATDRV1Extrel	0.29
47	Date:5/25/00SourceFile:D210525O.DATDRV2Extrel	0.32
47	Date:5/25/00SourceFile:D210525O.DATDRV3ME	0.66
47	Date:5/25/00SourceFile:D210525O.DATDRV4ME	0.25
48	Date:5/25/00SourceFile:D120525O.DATDRV1Extrel	0.25
48	Date:5/25/00SourceFile:D120525O.DATDRV2Extrel	0.37
48	Date:5/25/00SourceFile:D120525O.DATDRV3ME	0.30
48	Date:5/25/00SourceFile:D120525O.DATDRV4ME	0.25
48	Date:5/25/00SourceFile:D220525O.DATDRV1Extrel	0.22
48	Date:5/25/00SourceFile:D220525O.DATDRV2Extrel	0.36
48	Date:5/25/00SourceFile:D220525O.DATDRV3ME	0.25
48	Date:5/25/00SourceFile:D220525O.DATDRV4ME	0.19
49	Date:5/25/00SourceFile:D310525O.DATDRV1Extrel	0.25
49	Date:5/25/00SourceFile:D310525O.DATDRV2Extrel	0.29
49	Date:5/25/00SourceFile:D310525O.DATDRV3ME	0.23
50	Date:5/30/00SourceFile:E110530O.DATDRV1Extrel	0.24
50	Date:5/30/00SourceFile:E110530O.DATDRV2Extrel	0.28
50	Date:5/30/00SourceFile:E110530O.DATDRV3ME	0.36
50	Date:5/30/00SourceFile:E210530O.DATDRV1Extrel	0.26
50	Date:5/30/00SourceFile:E210530O.DATDRV2Extrel	0.26
50	Date:5/30/00SourceFile:E210530O.DATDRV3ME	0.32
50	Date:5/30/00SourceFile:E210530O.DATDRV4ME	0.21
51	Date:5/30/00SourceFile:E120530O.DATDRV1Extrel	0.41
51	Date:5/30/00SourceFile:E120530O.DATDRV2Extrel	0.36
51	Date:5/30/00SourceFile:E120530O.DATDRV3ME	0.49
51	Date:5/30/00SourceFile:E120530O.DATDRV4ME	0.34
52	Date:5/30/00SourceFile:K110530o.datDRV2Extrel	0.71
52	Date:5/30/00SourceFile:K110530o.datDRV3ME	0.74
52	Date:5/30/00SourceFile:K110530o.datDRV4ME	0.72
53	Date:5/31/00SourceFile:E210531O.DATDRV1Extrel	0.19
53	Date:5/31/00SourceFile:E210531O.DATDRV2Extrel	0.20
53	Date:5/31/00SourceFile:E210531O.DATDRV3ME	0.17
53	Date:5/31/00SourceFile:E210531O.DATDRV4ME	0.17
54	Date:5/31/00SourceFile:E120531O.DATDRV1Extrel	0.35
54	Date:5/31/00SourceFile:E120531O.DATDRV2Extrel	0.30
54	Date:5/31/00SourceFile:E120531O.DATDRV3ME	0.21
54	Date:5/31/00SourceFile:E120531O.DATDRV4ME	0.21
54	Date:5/31/00SourceFile:E220531O.DATDRV1Extrel	0.69

54	Date:5/31/00SourceFile:E220531O.DATDRV2Extrel	0.20
54	Date:5/31/00SourceFile:E220531O.DATDRV3ME	0.19
55	Date:5/31/00SourceFile:K110531O.DATDRV1Extrel	0.76
55	Date:5/31/00SourceFile:K110531O.DATDRV2Extrel	0.21
55	Date:5/31/00SourceFile:K110531O.DATDRV3ME	0.79
55	Date:5/31/00SourceFile:K110531O.DATDRV4ME	1.10
56	Date:6/1/00SourceFile:E110601O.DATDRV1Extrel	0.20
56	Date:6/1/00SourceFile:E110601O.DATDRV2Extrel	0.24
56	Date:6/1/00SourceFile:E110601O.DATDRV3ME	0.18
56	Date:6/1/00SourceFile:E110601O.DATDRV4ME	0.20
56	Date:6/1/00SourceFile:E210601O.DATDRV1Extrel	0.20
56	Date:6/1/00SourceFile:E210601O.DATDRV2Extrel	0.23
56	Date:6/1/00SourceFile:E210601O.DATDRV3ME	0.18
56	Date:6/1/00SourceFile:E210601O.DATDRV4ME	0.17
57	Date:6/1/00SourceFile:E120601O.DATDRV1Extrel	0.23
57	Date:6/1/00SourceFile:E120601O.DATDRV2Extrel	0.30
57	Date:6/1/00SourceFile:E120601O.DATDRV3ME	0.24
57	Date:6/1/00SourceFile:E120601O.DATDRV4ME	0.18
57	Date:5/31/00SourceFile:E220531O.DATDRV4ME	0.18
57	Date:6/1/00SourceFile:E220601O.DATDRV1Extrel	0.18
57	Date:6/1/00SourceFile:E220601O.DATDRV2Extrel	0.27
57	Date:6/1/00SourceFile:E220601O.DATDRV3ME	0.16
57	Date:6/1/00SourceFile:E220601O.DATDRV4ME	0.18
57	Date:6/1/00SourceFile:K110601O.DATDRV1Extrel	0.97
57	Date:6/1/00SourceFile:K110601O.DATDRV2Extrel	0.84
57	Date:6/1/00SourceFile:K110601O.DATDRV3ME	0.63
57	Date:6/1/00SourceFile:K110601O.DATDRV4ME	0.76
59	Date:6/5/00SourceFile:E210605O.DATDRV1Extrel	0.24
59	Date:6/5/00SourceFile:E210605O.DATDRV2Extrel	0.19
59	Date:6/5/00SourceFile:E210605O.DATDRV3ME	0.21
63	Date:6/6/00SourceFile:K120606O.DATDRV4ME	0.77
63	Date:6/6/00SourceFile:K120606O.DATDRV1Extrel	0.97
63	Date:6/6/00SourceFile:K120606O.DATDRV2Extrel	0.81
63	Date:6/6/00SourceFile:K120606O.DATDRV3ME	0.88
65	Date:6/7/00SourceFile:H110607O.DATDRV1Extrel	0.57
65	Date:6/7/00SourceFile:H110607O.DATDRV2Extrel	0.58
65	Date:6/7/00SourceFile:H110607O.DATDRV3ME	0.51
65	Date:6/7/00SourceFile:H110607O.DATDRV4ME	0.47
65	Date:6/7/00SourceFile:H210607O.DATDRV1Extrel	0.89
65	Date:6/7/00SourceFile:H210607O.DATDRV2Extrel	0.78
65	Date:6/7/00SourceFile:H210607O.DATDRV3ME	0.84
65	Date:6/7/00SourceFile:H210607O.DATDRV4ME	0.82
66	Date:6/7/00SourceFile:H120607O.DATDRV1Extrel	0.63
66	Date:6/7/00SourceFile:H120607O.DATDRV2Extrel	0.65
66	Date:6/7/00SourceFile:H120607O.DATDRV3ME	0.48
66	Date:6/7/00SourceFile:H120607O.DATDRV4ME	0.45
66	Date:6/7/00SourceFile:H220607O.DATDRV1Extrel	0.96
66	Date:6/7/00SourceFile:H220607O.DATDRV2Extrel	1.01
66	Date:6/7/00SourceFile:H220607O.DATDRV3ME	0.65
66	Date:6/7/00SourceFile:H220607O.DATDRV4ME	0.66

67	Date:6/8/00SourceFile:H210608O.DATDRV1Extrel	0.86
67	Date:6/8/00SourceFile:H210608O.DATDRV2Extrel	0.81
67	Date:6/8/00SourceFile:H210608O.DATDRV3ME	0.81
67	Date:6/8/00SourceFile:H210608O.DATDRV4ME	1.01
68	Date:6/8/00SourceFile:H120608o.datDRV1Extrel	0.60
68	Date:6/8/00SourceFile:H120608o.datDRV2Extrel	0.56
68	Date:6/8/00SourceFile:H120608o.datDRV3ME	0.53
68	Date:6/8/00SourceFile:H120608o.datDRV4ME	0.69
69	Date:6/12/00SourceFile:H110612o.datDRV1Extrel	1.05
69	Date:6/12/00SourceFile:H110612o.datDRV2Extrel	1.25
69	Date:6/12/00SourceFile:H210612O.DATDRV1Extrel	0.86
69	Date:6/12/00SourceFile:H210612O.DATDRV2Extrel	0.95
69	Date:6/12/00SourceFile:H210612O.DATDRV4ME	0.63
70	Date:6/12/00SourceFile:F210612O.DATDRV1Extrel	0.69
71	Date:6/12/00SourceFile:H110612o.datDRV4ME	0.48
71	Date:6/13/00SourceFile:H210613o.datDRV2Extrel	0.77
71	Date:6/13/00SourceFile:H210613o.datDRV3ME	0.81
71	Date:6/13/00SourceFile:H210613o.datDRV4ME	0.78
72	Date:6/13/00SourceFile:F110613O.DATDRV1Extrel	0.46
72	Date:6/13/00SourceFile:F110613O.DATDRV2Extrel	0.37
72	Date:6/13/00SourceFile:F110613O.DATDRV3ME	0.40
72	Date:6/13/00SourceFile:F110613O.DATDRV4ME	0.38
72	Date:6/13/00SourceFile:F210613O.DATDRV1Extrel	0.84
72	Date:6/13/00SourceFile:F210613O.DATDRV2Extrel	0.58
72	Date:6/13/00SourceFile:F210613O.DATDRV3ME	0.69
72	Date:6/13/00SourceFile:F210613O.DATDRV4ME	0.65
73	Date:6/14/00SourceFile:H210614O.DATDRV1Extrel	0.78
73	Date:6/14/00SourceFile:H210614O.DATDRV2Extrel	1.63
73	Date:6/14/00SourceFile:H210614O.DATDRV3ME	0.73
73	Date:6/14/00SourceFile:H210614O.DATDRV4ME	0.75
75	Date:6/15/00SourceFile:J110615O.DATDRV1Extrel	0.61
75	Date:6/15/00SourceFile:J110615O.DATDRV2Extrel	0.46
75	Date:6/15/00SourceFile:J110615O.DATDRV3ME	0.58
75	Date:6/15/00SourceFile:J110615O.DATDRV4ME	0.45
75	Date:5/30/00SourceFile:K110530o.datDRV1Extrel	0.87
76	Date:6/15/00SourceFile:F110615O.DATDRV1Extrel	0.41
76	Date:6/15/00SourceFile:F110615O.DATDRV2Extrel	0.48
76	Date:6/15/00SourceFile:F110615O.DATDRV3ME	0.29
76	Date:6/15/00SourceFile:F110615O.DATDRV4ME	0.37
76	Date:6/15/00SourceFile:F210615O.DATDRV1Extrel	0.69
76	Date:6/15/00SourceFile:F210615O.DATDRV2Extrel	0.80
76	Date:6/15/00SourceFile:F210615O.DATDRV3ME	0.53
76	Date:6/15/00SourceFile:F210615O.DATDRV4ME	0.65
77	Date:6/13/00SourceFile:H110613O.DATDRV2Extrel	0.56
77	Date:6/19/00SourceFile:H110619o.datDRV1Extrel	0.49
77	Date:6/19/00SourceFile:H110619o.datDRV2Extrel	0.49
77	Date:6/19/00SourceFile:H110619o.datDRV4ME	0.43
77	Date:6/19/00SourceFile:H210619O.DATDRV1Extrel	1.04
77	Date:6/19/00SourceFile:H210619O.DATDRV2Extrel	1.04
77	Date:6/19/00SourceFile:H210619O.DATDRV4ME	0.88

78	Date:6/19/00SourceFile:F110619O.DATDRV1Extrel	0.45
78	Date:6/19/00SourceFile:F110619O.DATDRV2Extrel	0.32
78	Date:6/19/00SourceFile:F110619O.DATDRV4ME	0.36
78	Date:6/19/00SourceFile:F210619O.DATDRV1Extrel	0.82
78	Date:6/19/00SourceFile:F210619O.DATDRV2Extrel	0.54
78	Date:6/19/00SourceFile:F210619O.DATDRV3ME	0.65
79	Date:6/20/00SourceFile:G110620O.DATDRV1Extrel	0.43
79	Date:6/20/00SourceFile:G110620O.DATDRV2Extrel	0.40
79	Date:6/20/00SourceFile:G110620O.DATDRV3ME	0.38
79	Date:6/20/00SourceFile:G110620O.DATDRV4ME	0.33
80	Date:6/20/00SourceFile:F210620O.DATDRV1Extrel	0.67
80	Date:6/20/00SourceFile:F210620O.DATDRV2Extrel	0.78
80	Date:6/20/00SourceFile:F210620O.DATDRV3ME	0.81
80	Date:6/20/00SourceFile:F210620O.DATDRV4ME	0.48
81	Date:6/21/00SourceFile:G110621O.DATDRV1Extrel	0.36
81	Date:6/21/00SourceFile:G110621O.DATDRV2Extrel	0.40
81	Date:6/21/00SourceFile:G110621O.DATDRV3ME	0.34
81	Date:6/21/00SourceFile:G110621O.DATDRV4ME	0.38
82	Date:6/21/00SourceFile:F110621O.DATDRV1Extrel	0.36
82	Date:6/21/00SourceFile:F110621O.DATDRV2Extrel	0.41
82	Date:6/21/00SourceFile:F110621O.DATDRV3ME	0.41
82	Date:6/21/00SourceFile:F110621O.DATDRV4ME	0.30
82	Date:6/21/00SourceFile:F210621O.DATDRV1Extrel	0.85
82	Date:6/21/00SourceFile:F210621O.DATDRV2Extrel	0.71
82	Date:6/21/00SourceFile:F210621O.DATDRV3ME	0.71
82	Date:6/21/00SourceFile:F210621O.DATDRV4ME	0.53
83	Date:6/22/00SourceFile:G110622O.DATDRV1Extrel	0.41
83	Date:6/22/00SourceFile:G110622O.DATDRV2Extrel	0.33
83	Date:6/22/00SourceFile:G110622O.DATDRV3ME	0.32
83	Date:6/22/00SourceFile:G110622O.DATDRV4ME	0.36
84	Date:6/22/00SourceFile:F110622O.DATDRV1Extrel	0.41
84	Date:6/22/00SourceFile:F110622O.DATDRV2Extrel	0.28
84	Date:6/22/00SourceFile:F110622O.DATDRV3ME	0.34
84	Date:6/22/00SourceFile:F110622O.DATDRV4ME	0.33
84	Date:6/22/00SourceFile:F210622O.DATDRV1Extrel	0.98
84	Date:6/22/00SourceFile:F210622O.DATDRV2Extrel	0.45
84	Date:6/22/00SourceFile:F210622O.DATDRV3ME	0.67
84	Date:6/22/00SourceFile:F210622O.DATDRV4ME	0.61
85	Date:6/26/00SourceFile:G110626O.DATDRV1Extrel	0.33
85	Date:6/26/00SourceFile:G110626O.DATDRV2Extrel	0.44
86	Date:6/26/00SourceFile:G120626O.DATDRV1Extrel	0.30
86	Date:6/26/00SourceFile:G120626O.DATDRV2Extrel	0.40
86	Date:6/26/00SourceFile:G120626O.DATDRV3ME	0.47
86	Date:6/26/00SourceFile:G120626O.DATDRV4ME	0.39
87	Date:6/27/00SourceFile:G110627O.DATDRV2Extrel	0.41
87	Date:6/27/00SourceFile:G110627O.DATDRV3ME	0.31
87	Date:6/27/00SourceFile:G220627O.DATDRV1Extrel	0.50
87	Date:6/27/00SourceFile:G220627O.DATDRV2Extrel	0.93
87	Date:6/27/00SourceFile:G220627O.DATDRV3ME	1.04
87	Date:6/27/00SourceFile:G220627O.DATDRV4ME	0.53

89	Date:6/28/00SourceFile:G110628O.DATDRV2Extrel	0.30
89	Date:6/28/00SourceFile:G110628O.DATDRV4ME	0.33

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APPENDIX F

INTRODUCTION TO MK 16 MOD 1 N_2-O_2 DECOMPRESSION TABLES

Tables G-1 through G-3 provide information necessary to plan single and repetitive dives with the MK 16 MOD 1 UBA when used with air as the diluent gas. These tables were generated with the same algorithm used to create the constant 0.7 ATA PO_2-in-N_2 tables in the present U.S. Navy Diving Manual[1,2], but with 20 fsw as the depth of the last allowed decompression stop, and consideration of PO_2 changes that occur with depth during idealized operation of the MK 16 MOD 1 UBA. The tables are used to plan repetitive dives in precisely the same manner as the Standard Air Decompression Tables in the current U.S. Navy Diving Manual, but instructions for such use are provided here as well.

The tables were calculated assuming air as the diluent gas throughout. The diver was assumed to breathe a 0.7 ATA PO_2 gas mixture starting with descent from surface and continuing until arrival at 33 fsw, whereupon the inspired PO_2 was assumed to be 1.25 ATA for the remainder of the descent, time on the bottom, and subsequent ascent (including any stops) to 12 fsw. The inspired PO_2 was then assumed to be 0.7 ATA for the remaining ascent from 12 fsw to surface, after which the diver was assumed to breathe air (21% FO_2). Descents and ascents were assumed to be at 60 and 30 fsw/min, respectively. No provisions were made to accommodate PO_2 overshoots during and after compression, PO_2 drops during and after ascent, or PO_2 cycling about the 1.25 ATA PO_2 setpoint.

The 20 fsw last allowed stop was implemented in the calculations by copying the surfacing MPTTs (Maximum Permissible Tissue Tensions) from the 10 fsw stop in place of those for the 20 fsw stop in the original VVAL18 MPTT Table. The 10 fsw MPTTs were then set equal to zero. Other sections of the EL-MK 15/16 VVAL18 RTA were modified to prevent any tests of ascents to 10 fsw.

Letter repetitive group designators were computed using the 120 min half-time tissue as the reference tissue in a fashion similar to the way such designators were computed for the constant 0.7 PO_2 N_2-O_2 tables in the current US Navy Diving Manual. In the latter, the difference between the reference tissue MPTT at 10 fsw and the reference tissue surface-saturation tension plus 1 fsw was divided by 16, the total number of repetitive groups from A-O and Z, to obtain the repetitive group increment[2]. Each letter group designator was then computed using the reference tissue inert gas tension at the end of the 10 fsw last stop. In present calculations, the repetitive group increment was computed as above using the MPTT at 20 fsw, and the group designator was computed using the reference tissue inert gas tension at the end of the 20 fsw last stop. Because the reference tissue MPTT at the 20 fsw stop was the value originally set for the 10 fsw stop (45.5 fsw), letter repetitive group designators in the present MK 16 MOD 1 N_2-O_2 decompression tables are equal to those in the constant 0.7 PO_2 N_2-O_2 tables.

The EL-MK 15/16 VVAL18 RTA is operable in either real-time or prescriptive mode. Algorithm-prescribed schedules for repetitive dives can be significantly different depending on which mode is used. All profiles tested were computed using the algorithm in simulated real-time mode. For calculation of repetitive dive schedules in this mode, all nine gas exchange compartments in the EL-MK 15/16 VVAL18 RTA are tracked from the end of a dive through the ensuing surface interval. Actual modeled compartmental inert gas loads at the start of a repetitive dive are then used to define the entering model state for the repetitive dive. On the other hand, the decompression tables in Appendix G were computed using the algorithm in its more classical prescriptive mode. In this mode, the gas tension in only a single compartment, the 120 min half-time compartment, is tracked to determine surface interval credits and residual nitrogen times for repetitive dives. Moreover, each surface interval is assumed to be entered with the maximum gas tension allowed in this compartment for the entering repetitive group designator, not the modeled surfacing gas tension in this compartment. As a result, dives allowed under the tables are more conservative than those allowed with use of the algorithm in real-time mode, provided no compartment with half-time longer than 120 min controls any of the decompressions.

LIMIT LINES

Table G-2 contains limit lines in the each of the dive depth groups. Schedules below the limit line in each group should not be used in normal operations. Limit lines for dives to depths of 100 to 150 fsw are placed according the same rule used in formulation of the constant 0.7 ATA PO_2-in-N_2 tables[3]; schedules below the limit line within a group cause the maximum N_2 tension in the 40 min half-time tissue to exceed 77 fsw and extend the EL-MK 15/16 VVAL18 RTA into depth/time regions where it has not been tested. Limit lines for dives to depths deeper than 150 fsw are placed in accord with the present recommendation that the MK 16 MOD 1 not be dived with N_2-O_2 to such depths without approval of the on-site commander; such approval to be granted only in consideration of the enhanced risks of O_2 toxicity, increased work of breathing, etc., that can be encountered in such dives. (A limit line is also placed in Table G-1 in accord with this recommendation.) In order to support repetitive dives after approved dives to depths greater than 150 fsw, surfacing repetive group designators are provided for schedules in the 160 – 190 fsw dive depth groups up to the point where the above 40 min half-time tissue tension rule is violated. Limit lines for dives to depths shallower than 100 fsw were placed according to additional considerations of estimated O_2 toxicity and DCS risks of the schedules as described below.

In order to limit O_2 toxicity risks during MK 25 MOD 1, MOD 2 and MOD 3 (Draeger LAR V UBA) diving, the current U.S.Navy Diving Manual limits the duration of such dives to 240 min at 25 fsw[4]. This limit is shortened if the dive includes short excursions to deeper depths. Diver inspired PO_2 while breathing the MK 25 varies with the purge procedure used prior to beginning the dive[5]. Using the recommended Single Fill/Empty Cycle (SFE) purge procedure, an average oxygen fraction of 74% is attained, which changes little throughout the course of the ensuing dive. This fraction corresponds to an inspired PO_2 of 1.3 ATA at 25 fsw. Therefore, in order to remain consistent with the sustained O_2 exposure limits for the MK 25 UBA, limit lines in the present MK 16 MOD 1 N_2-O_2 decompression table (Table G-2) are placed to allow dive bottom times no longer than 240 min, accounting for placement of the limit lines in the 40, 50 and 60 fsw dive depth groups. Note that in considering bottom times up to 720 min in Table G-1, the table gives repetitive dive groups for no-decompression dives that are prohibited under this recommendation. (It should also be noted that the U.S. Navy Diving Manual imposes no limit for breathing 1.3 ATA PO_2 in surface supplied He-O_2 diving operations. However, this lack of constraint is not applicable to MK 16 dives because, unlike MK 16 dives, surface supplied HeO_2 dives are undertaken with full helmet and communications with the surface.)

Table F-1 gives estimated DCS and O_2 toxicity risks for all schedules in Table G-2. The O_2 toxicity indices for each schedule include the Cumulative Unit Pulmonary Toxic Dose (CUPTD), computed as described by Harabin, *et al.*[6], the minimum percent normal pulmonary vital capacity during the schedule, as computed using the FR(1)-VC(2) model for pulmonary oxygen toxicity described by Vann[7], and the estimated risk of CNS O_2 toxicity computed using Model 2 of Harabin, *et al*[8]. Dotted horizontal lines correspond to the limit lines in Table G-2. Limit lines for the 70, 80 and 90 fsw dive

groups are placed below the last tabulated schedule that is associated with an estimated P_{DCS} of less than 5% under the JAP98-2 model; the model of the three used that estimates the highest P_{DCS} for these schedules.

Figure F-1 illustrates model-estimated DCS risks for single dive schedules in dive depth groups below 160 fsw that are above the limit lines in Tables F-1 and G-2. Estimated DCS risks are also shown for schedules in dive depth groups from 160 –190 fsw for which surfacing repetitive group designators are given in Table G-2.

Table F-1. Model-Estimated DCS Risks and O_2 Toxicity Indices for Schedules in Table G-2 (Dashed line in each depth group is limit line)

Schedule (Depth, fsw/ Bottom Time, min)	Estimated P_{DCS} BVM(3) (%)	BVM(3) 95% C.L.	JAP98-2 (%)	JAP98-2 95% C.L.	USN93 (%)	USN93 95% C.L.	O_2 Toxicity Indices CUPTD	% Norm VC	$P_{CNS\text{-}Tox}$ (%)
40/ 240	0.00	0.00 - 0.00	0.20	0.03 - 0.88	0.01	0.00 - 0.02	360.5	97.9	1.56
40/ 390	0.00	0.00 - 0.00	0.21	0.03 - 0.90	0.01	0.00 - 0.03	585.7	96.7	2.54
50/ 240	0.16	0.06 - 0.36	0.77	0.25 - 1.92	0.31	0.15 - 0.60	360.9	98.0	1.57
50/ 390	1.14	0.85 - 1.50	1.54	0.87 - 2.55	1.12	0.60 - 1.93	586.1	96.7	2.54
60/ 240	2.27	1.90 - 2.70	3.29	2.17 - 4.77	2.56	1.88 - 3.41	361.3	98.0	1.57
60/ 297	3.34	2.85 3.89	4.56	3.34 6.03	3.83	2.94 4.89	446.9	97.5	1.94
60/ 300	3.28	2.79 - 3.84	4.52	3.33 - 5.98	3.77	2.87 - 4.85	453.3	97.5	1.97
60/ 310	3.38	2.87 - 3.96	4.66	3.46 - 6.10	3.90	2.96 - 5.01	469.8	97.4	2.04
60/ 320	3.48	2.95 - 4.08	4.79	3.60 - 6.21	4.02	3.06 - 5.18	486.3	97.3	2.11
60/ 330	3.58	3.02 - 4.21	4.91	3.73 - 6.33	4.15	3.15 - 5.34	502.8	97.2	2.18
60/ 340	3.68	3.10 - 4.34	5.04	3.86 - 6.44	4.27	3.25 - 5.50	519.3	97.1	2.26
60/ 350	3.79	3.18 - 4.47	5.16	3.98 - 6.56	4.40	3.34 - 5.66	535.8	97.0	2.33
60/ 360	3.89	3.27 - 4.60	5.28	4.10 - 6.67	4.52	3.43 - 5.82	552.3	96.9	2.40
60/ 370	4.00	3.35 - 4.73	5.40	4.22 - 6.78	4.65	3.53 - 5.98	568.8	96.8	2.47
60/ 380	4.11	3.44 - 4.86	5.52	4.34 - 6.89	4.77	3.62 - 6.13	585.3	96.7	2.54
60/ 390	4.22	3.54 - 5.00	5.63	4.45 - 7.00	4.89	3.71 - 6.29	601.8	96.6	2.61
70/ 130	1.93	1.54 - 2.39	3.15	1.93 - 4.84	2.36	1.74 - 3.12	196.8	98.9	0.84
70/ 140	2.08	1.69 - 2.54	3.28	2.05 - 4.95	2.35	1.72 - 3.13	216.8	98.8	0.94
70/ 150	2.25	1.85 - 2.72	3.40	2.17 - 5.07	2.40	1.75 - 3.22	236.3	98.7	1.02
70/ 160	2.47	2.05 - 2.94	3.61	2.35 - 5.29	2.56	1.87 - 3.42	254.3	98.6	1.10
70/ 170	2.68	2.26 - 3.17	3.82	2.54 - 5.49	2.72	1.99 - 3.63	272.3	98.5	1.18
70/ 180	2.89	2.45 - 3.39	4.02	2.73 - 5.69	2.89	2.12 - 3.85	290.3	98.4	1.26
70/ 190	3.10	2.63 - 3.63	4.22	2.92 - 5.88	3.06	2.25 - 4.06	308.3	98.3	1.34
70/ 200	2.72	2.25 - 3.25	4.42	3.11 - 6.07	3.24	2.39 - 4.28	326.3	98.2	1.42
70/ 210	2.90	2.41 - 3.47	4.53	3.22 - 6.15	3.33	2.45 - 4.43	345.8	98.1	1.50
70/ 220	3.09	2.57 - 3.67	4.63	3.33 - 6.22	3.44	2.51 - 4.58	365.3	97.9	1.59
70/ 230	3.30	2.75 - 3.91	4.81	3.52 - 6.39	3.63	2.66 - 4.84	383.3	97.8	1.67
70/ 240	3.50	2.93 - 4.15	4.99	3.70 - 6.56	3.83	2.80 - 5.09	401.3	97.7	1.74
70/ 250	3.66	3.07 - 4.34	5.08	3.80 - 6.62	3.95	2.88 - 5.28	420.8	97.6	1.83
70/ 260	3.86	3.23 - 4.57	5.25	3.97 - 6.79	4.16	3.02 - 5.55	438.8	97.5	1.91
70/ 270	4.05	3.39 - 4.79	5.42	4.13 - 6.94	4.36	3.17 - 5.81	456.8	97.4	1.99
70/ 280	4.23	3.54 - 5.00	5.58	4.30 - 7.10	4.56	3.32 - 6.08	474.8	97.3	2.06
70/ 290	4.45	3.72 - 5.26	5.83	4.53 - 7.35	4.83	3.54 - 6.40	491.3	97.2	2.14
70/ 300	4.62	3.86 - 5.46	5.99	4.68 - 7.50	5.03	3.69 - 6.66	509.3	97.1	2.21
70/ 310	4.78	4.00 - 5.66	6.14	4.83 - 7.65	5.22	3.84 - 6.91	527.3	97.0	2.29
70/ 320	4.93	4.12 - 5.85	6.28	4.97 - 7.79	5.42	3.98 - 7.16	545.3	96.9	2.37
70/ 330	5.09	4.25 - 6.03	6.42	5.11 - 7.93	5.61	4.13 - 7.40	563.3	96.8	2.45
70/ 340	5.23	4.36 - 6.20	6.56	5.24 - 8.06	5.80	4.27 - 7.64	581.3	96.7	2.53
70/ 350	5.32	4.44 - 6.31	6.60	5.30 - 8.10	5.92	4.36 - 7.81	600.8	96.6	2.61
80/ 70	1.41	0.98 - 1.96	2.34	1.48 - 3.53	1.78	1.20 - 2.53	107.2	99.4	0.45
80/ 75	1.49	1.05 - 2.05	2.44	1.54 - 3.68	1.69	1.18 - 2.36	118.3	99.3	0.50
80/ 80	1.64	1.19 - 2.20	2.61	1.65 - 3.92	1.80	1.28 - 2.46	127.3	99.3	0.54
80/ 85	1.76	1.31 - 2.33	2.72	1.72 - 4.08	1.83	1.31 - 2.48	137.8	99.2	0.59

Schedule (Depth, fsw/ Bottom Time, min)	Estimated P_{DCS} BVM(3) (%)	95% C.L.	JAP98-2 (%)	95% C.L.	USN93 (%)	95% C.L.	O_2 Toxicity Indices CUPTD	% Norm VC	$P_{CNS\text{-}Tox}$ (%)
80/ 90	1.92	1.46 - 2.48	2.90	1.85 - 4.33	1.95	1.41 - 2.63	146.8	99.2	0.63
80/ 95	2.08	1.60 - 2.65	3.10	1.99 - 4.59	2.09	1.52 - 2.81	155.8	99.1	0.67
80/100	2.24	1.77 - 2.80	3.29	2.13 - 4.84	2.24	1.63 - 2.99	164.8	99.1	0.71
80/ 110	2.49	2.02 - 3.04	3.53	2.31 - 5.14	2.34	1.69 - 3.16	185.8	98.9	0.80
80/ 120	2.73	2.25 - 3.29	3.76	2.49 - 5.42	2.46	1.76 - 3.34	206.8	98.8	0.89
80/ 130	2.97	2.48 - 3.52	3.98	2.67 - 5.68	2.59	1.84 - 3.53	227.8	98.7	0.99
80/ 140	3.20	2.68 - 3.79	4.19	2.84 - 5.92	2.72	1.94 - 3.72	248.8	98.6	1.08
80/ 150	3.47	2.95 - 4.05	4.47	3.08 - 6.24	2.96	2.12 - 4.00	268.3	98.5	1.16
80/ 160	3.74	3.18 - 4.36	4.75	3.32 - 6.54	3.20	2.32 - 4.29	287.8	98.4	1.25
80/ 170	3.94	3.37 - 4.58	4.92	3.47 - 6.72	3.36	2.45 - 4.50	308.8	98.3	1.34
80/ 180	4.10	3.48 - 4.78	4.99	3.55 - 6.78	3.47	2.51 - 4.66	331.3	98.1	1.44
80/ 190	4.28	3.30 - 5.46	5.14	3.70 - 6.93	3.67	2.65 - 4.93	352.3	98.0	1.53
80/ 200	4.46	3.63 - 5.41	5.29	3.84 - 7.06	3.88	2.79 - 5.23	373.3	97.9	1.62
80/ 210	4.68	3.88 - 5.60	5.52	4.06 - 7.28	4.16	3.00 - 5.59	392.8	97.8	1.71
80/ 220	4.84	4.05 - 5.74	5.65	4.20 - 7.39	4.38	3.14 - 5.91	413.8	97.7	1.80
80/ 230	5.05	4.22 - 5.98	5.86	4.41 - 7.59	4.66	3.35 - 6.27	433.3	97.6	1.88
80/ 240	5.24	4.40 - 6.18	6.06	4.61 - 7.78	4.94	3.56 - 6.64	452.8	97.5	1.97
80/ 250	5.43	4.55 - 6.41	6.26	4.81 - 7.97	5.22	3.77 - 6.99	472.3	97.3	2.05
80/ 260	5.60	4.69 - 6.63	6.45	5.00 - 8.14	5.49	3.98 - 7.34	491.8	97.2	2.14
80/ 270	5.71	4.78 - 6.76	6.55	5.12 - 8.21	5.71	4.13 - 7.63	512.8	97.1	2.23
80/ 280	5.82	4.85 - 6.91	6.65	5.24 - 8.27	5.92	4.29 - 7.90	533.8	97.0	2.32
80/ 290	5.57	4.66 - 6.58	6.82	5.44 - 8.41	6.18	4.50 - 8.20	553.3	96.9	2.40
80/ 300	5.69	4.76 - 6.73	6.92	5.58 - 8.45	6.37	4.68 - 8.40	574.3	96.8	2.49
80/ 310	5.85	4.89 - 6.92	7.09	5.77 - 8.59	6.61	4.91 - 8.65	593.8	96.7	2.58
80/ 320	6.00	5.01 - 7.10	7.26	5.95 - 8.75	6.84	5.12 - 8.89	613.3	96.6	2.66
90/ 50	1.51	1.03 - 2.15	2.23	1.52 - 3.17	1.82	1.26 - 2.54	77.5	99.6	0.32
90/ 55	1.64	1.14 - 2.29	2.35	1.59 - 3.35	1.68	1.16 - 2.36	90.3	99.5	0.38
90/ 60	1.78	1.27 - 2.44	2.47	1.66 - 3.53	1.67	1.16 - 2.34	102.3	99.4	0.43
90/ 65	1.97	1.44 - 2.64	2.66	1.79 - 3.80	1.76	1.26 - 2.40	112.8	99.4	0.48
90/ 70	2.16	1.63 - 2.81	2.87	1.94 - 4.09	1.87	1.36 - 2.51	123.3	99.3	0.53
90/ 75	2.32	1.78 - 2.97	3.02	2.03 - 4.30	1.90	1.39 - 2.56	135.3	99.2	0.58
90/ 80	2.55	1.99 - 3.21	3.32	2.26 - 4.69	2.13	1.56 - 2.84	144.3	99.2	0.62
90/ 85	2.74	2.17 - 3.40	3.55	2.42 - 4.99	2.27	1.66 - 3.03	154.8	99.1	0.66
90/ 90	2.93	2.37 - 3.58	3.78	2.60 - 5.29	2.42	1.76 - 3.23	165.3	99.1	0.71
90/ 95	3.07	2.52 - 3.72	3.92	2.69 - 5.48	2.47	1.78 - 3.33	177.3	99.0	0.76
90/100	3.21	2.65 - 3.85	4.05	2.79 - 5.67	2.52	1.80 - 3.42	189.3	98.9	0.82
90/ 110	3.48	2.90 - 4.13	4.30	2.96 - 6.01	2.63	1.85 - 3.61	213.3	98.8	0.92
90/ 120	3.78	3.17 - 4.46	4.62	3.20 - 6.42	2.84	2.01 - 3.90	235.8	98.7	1.02
90/ 130	4.06	3.44 - 4.75	4.91	3.42 - 6.78	3.06	2.19 - 4.16	258.3	98.5	1.12
90/ 140	4.34	3.68 - 5.07	5.18	3.63 - 7.12	3.30	2.39 - 4.43	280.8	98.4	1.22
90/ 150	4.54	3.30 - 6.06	5.33	3.74 - 7.31	3.48	2.53 - 4.65	304.7	98.3	1.32
90/ 160	4.73	3.69 - 5.96	5.46	3.85 - 7.46	3.68	2.67 - 4.93	328.7	98.1	1.43
90/ 170	4.97	4.00 - 6.09	5.68	4.05 - 7.70	3.98	2.89 - 5.33	351.2	98.0	1.53
90/ 180	5.19	4.25 - 6.26	5.89	4.24 - 7.90	4.29	3.11 - 5.75	373.7	97.9	1.62
90/ 190	5.40	4.45 - 6.46	6.07	4.42 - 8.07	4.59	3.32 - 6.16	396.2	97.8	1.72
100/ 39	1.64	1.10 - 2.35	2.14	1.50 - 2.97	1.85	1.28 - 2.59	61.5	99.7	0.24
100/ 40	1.65	1.11 - 2.35	2.16	1.52 - 2.98	1.66	1.18 - 2.28	65.3	99.6	0.27

Schedule (Depth, fsw/ Bottom Time, min)	Estimated P_{DCS} BVM(3) (%)	95% C.L.	JAP98-2 (%)	95% C.L.	USN93 (%)	95% C.L.	O_2 Toxicity Indices CUPTD	% Norm VC	$P_{CNS-Tox}$ (%)
100/ 45	1.85	1.29 - 2.56	2.33	1.64 - 3.22	1.68	1.18 - 2.31	78.8	99.6	0.33
100/ 50	2.06	1.48 - 2.79	2.48	1.74 - 3.43	1.67	1.16 - 2.34	92.3	99.5	0.39
100/ 55	2.30	1.69 - 3.05	2.71	1.90 - 3.74	1.75	1.27 - 2.37	104.3	99.4	0.44
100/ 60	2.53	1.92 - 3.28	2.96	2.08 - 4.07	1.86	1.37 - 2.47	116.3	99.3	0.50
100/ 65	2.77	2.14 - 3.52	3.22	2.27 - 4.42	1.99	1.47 - 2.62	128.3	99.3	0.55
100/ 70	3.00	2.36 - 3.76	3.49	2.46 - 4.77	2.12	1.57 - 2.81	140.3	99.2	0.60
100/ 75	3.27	2.61 - 4.04	3.84	2.73 - 5.22	2.36	1.75 - 3.13	150.8	99.1	0.65
100/ 80	3.49	1.24 - 7.71	4.10	2.93 - 5.57	2.51	1.84 - 3.35	162.8	99.1	0.70
100/ 85	3.66	1.38 - 7.78	4.27	3.04 - 5.82	2.57	1.85 - 3.46	176.3	99.0	0.76
100/ 90	3.82	3.15 - 4.59	4.43	3.14 - 6.05	2.62	1.87 - 3.57	189.8	98.9	0.82
100/ 95	3.98	3.29 - 4.77	4.59	3.23 - 6.28	2.67	1.89 - 3.67	203.3	98.8	0.88
100/ 100	4.19	3.50 - 4.97	4.83	3.42 - 6.60	2.84	2.01 - 3.89	215.3	98.8	0.93
100/ 110	4.54	3.82 - 5.35	5.19	3.66 - 7.09	3.08	2.20 - 4.19	240.8	98.6	1.04
100/ 120	4.91	2.97 - 7.55	5.60	3.96 - 7.63	3.42	2.49 - 4.58	264.8	98.5	1.15
110/ 32	1.77	0.63 - 4.03	2.08	1.46 - 2.87	1.88	1.28 - 2.66	51.4	99.7	0.20
110/ 35	1.89	1.30 - 2.65	2.20	1.57 - 3.00	1.69	1.20 - 2.32	61.3	99.7	0.25
110/ 40	2.16	1.54 - 2.94	2.41	1.72 - 3.27	1.72	1.22 - 2.36	76.3	99.6	0.32
110/ 45	2.43	1.78 - 3.25	2.60	1.87 - 3.53	1.71	1.22 - 2.35	91.3	99.5	0.39
110/ 50	2.74	2.05 - 3.57	2.88	2.08 - 3.90	1.81	1.34 - 2.40	104.8	99.4	0.45
110/ 55	3.03	2.31 - 3.90	3.19	2.31 - 4.29	1.94	1.45 - 2.53	118.3	99.3	0.50
110/ 60	3.32	2.57 - 4.21	3.50	2.54 - 4.69	2.08	1.56 - 2.72	131.8	99.3	0.56
110/ 65	3.63	2.85 - 4.55	3.90	2.84 - 5.19	2.32	1.74 - 3.04	143.8	99.2	0.62
110/ 70	3.95	3.14 - 4.89	4.30	3.15 - 5.71	2.57	1.92 - 3.38	155.8	99.1	0.67
110/ 75	4.18	0.98 - 11.35	4.54	3.31 - 6.03	2.65	1.95 - 3.53	170.8	99.0	0.74
110/ 80	4.40	3.56 - 5.36	4.76	3.46 - 6.35	2.74	1.98 - 3.68	185.8	98.9	0.80
110/ 85	4.65	3.80 - 5.61	5.05	3.67 - 6.74	2.91	2.10 - 3.93	199.3	98.9	0.86
110/ 90	4.84	3.98 - 5.81	5.23	3.77 - 7.02	2.99	2.15 - 4.06	214.3	98.8	0.93
110/ 95	5.05	1.76 - 11.00	5.49	3.95 - 7.38	3.17	2.28 - 4.28	227.8	98.7	0.99
110/ 100	5.28	2.73 - 9.03	5.74	4.12 - 7.73	3.35	2.43 - 4.50	241.3	98.6	1.05
110/ 110	5.64	3.61 - 8.31	6.12	4.36 - 8.27	3.67	2.71 - 4.85	269.9	98.5	1.17
110/ 120	5.92	4.20 - 8.06	6.33	4.48 - 8.62	3.96	2.94 - 5.20	299.9	98.3	1.30
120/ 27	1.87	1.29 - 2.63	2.01	1.40 - 2.79	1.90	1.27 - 2.72	44.3	99.8	0.16
120/ 30	2.00	1.39 - 2.79	2.13	1.52 - 2.90	1.66	1.17 - 2.29	55.8	99.7	0.23
120/ 35	2.34	1.68 - 3.18	2.39	1.72 - 3.23	1.70	1.21 - 2.33	72.3	99.6	0.30
120/ 40	2.69	1.98 - 3.58	2.63	1.90 - 3.53	1.71	1.22 - 2.33	88.8	99.5	0.37
120/ 45	3.06	2.28 - 4.02	2.95	2.15 - 3.95	1.81	1.35 - 2.38	103.8	99.4	0.44
120/ 50	3.42	2.58 - 4.44	3.31	2.43 - 4.40	1.95	1.48 - 2.53	118.8	99.3	0.51
120/ 55	3.80	2.90 - 4.88	3.75	2.77 - 4.95	2.20	1.67 - 2.84	132.3	99.2	0.57
120/ 60	4.21	3.25 - 5.34	4.23	3.15 - 5.54	2.47	1.88 - 3.19	145.8	99.2	0.63
120/ 65	4.59	3.59 - 5.76	4.71	3.53 - 6.13	2.77	2.10 - 3.59	159.3	99.1	0.69
120/ 70	4.88	3.84 - 6.09	5.00	3.72 - 6.53	2.88	2.14 - 3.78	175.8	99.0	0.76
120/ 75	5.13	4.06 - 6.36	5.25	3.89 - 6.91	2.98	2.19 - 3.95	192.3	98.9	0.83
120/ 80	5.44	4.35 - 6.69	5.62	4.15 - 7.39	3.19	2.34 - 4.25	207.3	98.8	0.90
120/ 85	5.66	2.44 - 10.84	5.84	4.27 - 7.73	3.31	2.41 - 4.41	223.8	98.7	0.97
120/ 90	5.94	3.07 - 10.13	6.16	4.50 - 8.17	3.54	2.61 - 4.69	238.8	98.6	1.03
120/ 95	6.19	3.53 - 9.87	6.44	4.68 - 8.57	3.76	2.80 - 4.94	253.8	98.6	1.10
120/ 100	6.36	3.94 - 9.57	6.60	4.76 - 8.83	3.91	2.93 - 5.11	270.3	98.5	1.17

Schedule (Depth, fsw/ Bottom Time, min)	Estimated P_{DCS} BVM(3) (%)	95% C.L.	JAP98-2 (%)	95% C.L.	USN93 (%)	95% C.L.	O_2 Toxicity Indices CUPTD	% Norm VC	$P_{CNS\text{-}Tox}$ (%)
130/ 23	1.92	1.33 - 2.69	1.91	1.30 - 2.70	1.87	1.23 - 2.74	38.6	99.8	0.14
130/ 25	2.02	0.08 - 12.00	2.05	1.45 - 2.81	1.70	1.19 - 2.37	45.8	99.7	0.18
130/ 30	2.41	1.72 - 3.29	2.31	1.66 - 3.13	1.69	1.20 - 2.32	65.3	99.6	0.27
130/ 35	2.84	2.07 - 3.81	2.60	1.88 - 3.49	1.71	1.21 - 2.36	83.3	99.5	0.35
130/ 40	3.30	2.43 - 4.37	2.97	2.17 - 3.95	1.82	1.36 - 2.39	99.8	99.4	0.42
130/ 45	3.73	2.76 - 4.91	3.38	2.49 - 4.46	1.98	1.51 - 2.54	116.3	99.3	0.50
130/ 50	4.21	3.14 - 5.49	3.89	2.91 - 5.09	2.24	1.73 - 2.85	131.3	99.3	0.56
130/ 55	4.69	3.52 - 6.08	4.44	3.34 - 5.76	2.56	1.97 - 3.26	146.3	99.2	0.63
130/ 60	5.18	3.94 - 6.65	5.09	3.87 - 6.53	2.99	2.31 - 3.82	159.8	99.1	0.69
130/ 65	5.49	0.63 - 19.02	5.35	4.04 - 6.92	3.03	2.29 - 3.93	179.3	99.0	0.77
130/ 70	5.82	4.49 - 7.39	5.70	4.27 - 7.40	3.19	2.39 - 4.18	197.3	98.9	0.85
130/ 75	6.17	2.31 - 12.77	6.11	4.56 - 7.96	3.45	2.57 - 4.52	213.8	98.8	0.92
130/ 80	6.49	3.04 - 11.74	6.48	4.82 - 8.48	3.70	2.76 - 4.83	230.3	98.7	1.00
140/ 21	2.12	1.49 - 2.92	1.99	1.35 - 2.84	2.01	1.31 - 2.94	36.1	99.8	0.13
140/ 25	2.37	1.68 - 3.25	2.21	1.58 - 3.02	1.74	1.22 - 2.41	53.8	99.7	0.22
140/ 30	2.88	0.02 - 22.52	2.55	1.84 - 3.45	1.79	1.27 - 2.45	73.8	99.6	0.31
140/ 35	3.41	2.48 - 4.56	2.91	2.12 - 3.89	1.83	1.35 - 2.43	92.8	99.5	0.39
140/ 40	3.95	2.87 - 5.27	3.37	2.49 - 4.46	1.98	1.52 - 2.53	110.8	99.4	0.47
140/ 45	4.48	3.26 - 5.97	3.88	2.89 - 5.08	2.19	1.71 - 2.78	128.8	99.3	0.55
140/ 50	5.08	3.72 - 6.74	4.59	3.48 - 5.92	2.63	2.06 - 3.31	143.8	99.2	0.62
140/ 55	5.63	4.13 - 7.44	5.23	4.00 - 6.69	3.02	2.35 - 3.80	160.3	99.1	0.69
140/ 60	6.06	4.48 - 7.97	5.68	4.33 - 7.28	3.22	2.48 - 4.11	179.8	99.0	0.78
140/ 65	6.44	1.57 - 16.38	6.09	4.61 - 7.85	3.42	2.60 - 4.40	199.3	98.9	0.86
140/ 70	6.88	2.77 - 13.57	6.59	4.98 - 8.51	3.73	2.83 - 4.81	217.3	98.8	0.94
140/ 75	7.17	3.48 - 12.66	6.85	5.10 - 8.93	3.86	2.93 - 4.99	238.3	98.6	1.03
140/ 80	7.44	4.01 - 12.25	7.06	5.19 - 9.30	4.04	3.06 - 5.21	259.3	98.5	1.12
150/ 17	1.94	1.35 - 2.70	1.66	1.08 - 2.46	1.75	1.09 - 2.69	30.4	99.8	0.10
150/ 20	2.17	1.52 - 2.99	1.98	1.39 - 2.73	1.69	1.16 - 2.39	40.8	99.8	0.16
150/ 25	2.73	1.96 - 3.70	2.33	1.66 - 3.18	1.71	1.20 - 2.37	63.3	99.6	0.26
150/ 30	3.34	2.41 - 4.52	2.71	1.95 - 3.66	1.76	1.26 - 2.40	84.3	99.5	0.35
150/ 35	3.99	2.85 - 5.40	3.21	2.35 - 4.28	1.90	1.45 - 2.44	103.8	99.4	0.44
150/ 40	4.65	3.30 - 6.32	3.85	2.87 - 5.05	2.22	1.74 - 2.79	121.8	99.3	0.52
150/ 45	5.33	1.67 - 12.24	4.56	3.45 - 5.89	2.60	2.05 - 3.24	139.8	99.2	0.60
150/ 50	5.97	4.25 - 8.07	5.29	4.05 - 6.76	3.03	2.39 - 3.78	157.8	99.1	0.68
150/ 55	6.50	4.63 - 8.79	5.84	4.46 - 7.46	3.27	2.55 - 4.13	178.8	99.0	0.77
150/ 60	6.99	2.07 - 16.12	6.36	4.84 - 8.15	3.55	2.74 - 4.52	199.8	98.9	0.86
150/ 70	7.79	3.69 - 13.88	7.16	5.34 - 9.32	4.03	3.08 - 5.16	243.3	98.6	1.05
150/ 80	8.36	4.74 - 13.28	7.60	5.52 - 10.11	4.52	3.42 - 5.83	289.8	98.4	1.26
160/ 15	1.97	0.00 - 42.38	1.58	1.00 - 2.41	1.72	1.04 - 2.69	27.8	99.9	0.09
160/ 20	2.46	1.75 - 3.38	2.13	1.50 - 2.93	1.75	1.20 - 2.46	47.3	99.7	0.19
160/ 25	3.15	0.04 - 21.95	2.51	1.79 - 3.43	1.73	1.23 - 2.38	71.3	99.6	0.30
160/ 30	3.90	2.76 - 5.31	3.03	2.19 - 4.07	1.88	1.41 - 2.47	92.3	99.5	0.39
160/ 35	4.63	3.24 - 6.38	3.64	2.68 - 4.82	2.10	1.64 - 2.65	113.3	99.4	0.48
160/ 40	5.38	3.71 - 7.47	4.33	3.24 - 5.65	2.42	1.91 - 3.02	134.3	99.2	0.57
160/ 45	6.19	4.29 - 8.56	5.26	4.02 - 6.73	3.00	2.39 - 3.71	152.3	99.1	0.65

Schedule (Depth, fsw/ Bottom Time, min)	Estimated P_{DCS} BVM(3) (%)	95% C.L.	JAP98-2 (%)	95% C.L.	USN93 (%)	95% C.L.	O_2 Toxicity Indices CUPTD	% Norm VC	$P_{CNS\text{-}Tox}$ (%)
160/ 50	6.84	4.73 - 9.46	5.91	4.53 - 7.55	3.32	2.62 - 4.14	174.8	99.0	0.75
160/ 55	7.42	2.12 - 17.26	6.53	4.99 - 8.34	3.64	2.84 - 4.58	197.3	98.9	0.85
160/ 60	7.94	3.14 - 15.66	7.03	5.32 - 9.04	3.91	3.02 - 4.96	221.3	98.7	0.96
160/ 80	9.29	5.42 - 14.41	8.19	5.89 - 10.97	5.14	3.86 - 6.68	320.2	98.2	1.39
170/ 13	1.93	1.33 - 2.70	1.45	0.86 - 2.30	1.63	0.95 - 2.63	25.2	99.9	0.07
170/ 15	1.97	1.36 - 2.76	1.68	1.16 - 2.36	1.51	1.00 - 2.20	32.8	99.8	0.13
170/ 20	2.79	1.99 - 3.78	2.28	1.61 - 3.14	1.80	1.25 - 2.53	53.8	99.7	0.22
170/ 25	3.58	2.54 - 4.89	2.71	1.92 - 3.69	1.78	1.27 - 2.44	79.3	99.5	0.33
170/ 30	4.46	3.09 - 6.18	3.33	2.42 - 4.47	1.97	1.52 - 2.52	101.8	99.4	0.43
170/ 35	5.31	3.61 - 7.46	4.07	3.01 - 5.37	2.28	1.80 - 2.85	124.3	99.3	0.53
170/ 40	6.20	4.17 - 8.78	4.98	3.77 - 6.44	2.81	2.24 - 3.48	145.3	99.2	0.62
170/ 45	7.05	4.74 - 9.96	5.93	4.55 - 7.56	3.38	2.70 - 4.17	166.3	99.1	0.72
170/ 50	7.69	2.06 - 18.39	6.50	4.95 - 8.32	3.60	2.83 - 4.51	193.3	98.9	0.83
170/ 55	8.30	3.13 - 16.74	7.09	5.37 - 9.13	3.93	3.05 - 4.96	218.8	98.8	0.95
170/ 60	8.76	3.89 - 16.10	7.44	5.54 - 9.69	4.14	3.17 - 5.30	247.3	98.6	1.07
180/ 12	2.04	0.00 - 28.09	1.46	0.85 - 2.36	1.67	0.97 - 2.72	24.1	99.9	0.07
180/ 15	2.23	1.57 - 3.08	1.85	1.28 - 2.59	1.64	1.10 - 2.37	36.3	99.8	0.14
180/ 20	3.12	2.23 - 4.23	2.39	1.68 - 3.30	1.76	1.23 - 2.44	61.8	99.6	0.26
180/ 25	4.07	2.85 - 5.62	2.93	2.09 - 4.00	1.83	1.35 - 2.42	87.3	99.5	0.37
180/ 30	5.05	3.42 - 7.13	3.69	2.68 - 4.93	2.12	1.65 - 2.68	111.3	99.4	0.47
180/ 35	6.04	4.01 - 8.64	4.58	3.40 - 6.00	2.55	2.02 - 3.17	135.3	99.2	0.58
180/ 40	7.05	4.62 - 10.15	5.64	4.28 - 7.25	3.19	2.54 - 3.93	157.8	99.1	0.68
180/ 45	7.85	1.52 - 21.30	6.42	4.88 - 8.23	3.57	2.83 - 4.44	184.8	98.9	0.80
180/ 50	8.60	2.95 - 18.11	7.15	5.42 - 9.18	3.97	3.11 - 4.98	211.8	98.8	0.92
180/ 55	9.13	3.82 - 17.29	7.52	5.60 - 9.80	4.19	3.21 - 5.35	243.3	98.6	1.05
180/ 60	9.62	4.48 - 17.14	7.92	5.82 - 10.43	4.57	3.45 - 5.90	273.3	98.4	1.18
190/ 10	1.87	0.00 - 56.06	1.24	0.66 - 2.14	1.48	0.80 - 2.54	21.5	99.9	0.05
190/ 15	2.51	1.78 - 3.43	2.03	1.41 - 2.84	1.78	1.20 - 2.56	39.8	99.8	0.16
190/ 20	3.50	2.48 - 4.78	2.55	1.79 - 3.52	1.79	1.26 - 2.46	68.3	99.6	0.28
190/ 25	4.58	3.13 - 6.41	3.20	2.28 - 4.36	1.94	1.48 - 2.49	95.3	99.5	0.40
190/ 30	5.70	3.78 - 8.18	4.12	3.04 - 5.44	2.34	1.84 - 2.93	120.8	99.3	0.52
190/ 35	6.87	4.44 - 10.00	5.27	3.96 - 6.83	3.01	2.39 - 3.73	144.8	99.2	0.62
190/ 40	7.79	4.95 - 11.44	6.06	4.57 - 7.84	3.34	2.63 - 4.17	174.8	99.0	0.75
190/ 45	8.68	2.69 - 19.17	6.95	5.25 - 8.96	3.84	3.01 - 4.82	203.3	98.8	0.88
190/ 50	9.35	3.63 - 18.39	7.45	5.54 - 9.72	4.12	3.15 - 5.27	236.3	98.7	1.02
190/ 55	9.92	4.39 - 18.12	7.89	5.77 - 10.42	4.53	3.40 - 5.88	269.3	98.5	1.17
190/ 60	10.46	5.03 - 18.18	8.35	6.05 - 11.12	5.07	3.78 - 6.64	300.8	98.3	1.31

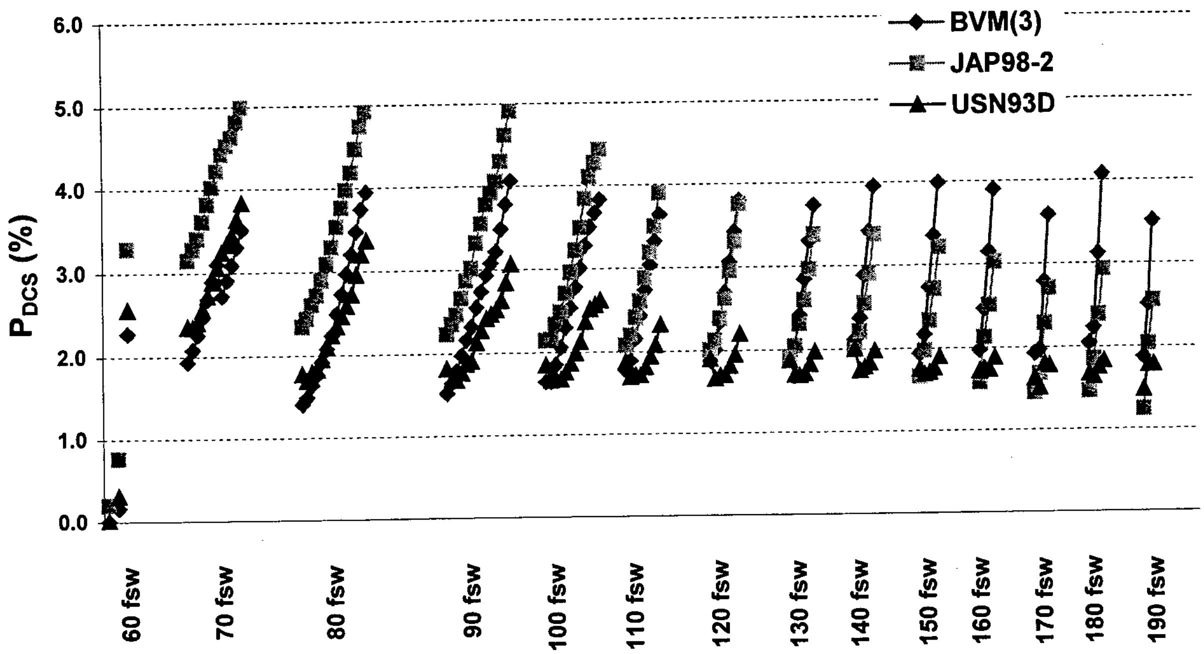

Figure F-1. Model-estimated DCS risks for schedules in dive depth groups below 160 fsw that are above the limit lines in Tables F-1 and G-2. Estimated DCS risks are also shown for schedules in dive depth groups from 160 –190 fsw for which surfacing repetitive group designators are given in Table G-2. Risks are ordered from left to right on the abscissa in the order of profile appearance in Table F-1, and consequently appear in order of increasing bottom time within each indicated dive depth group. Under the BVM(3) and JAP98-2 models, estimated risks tend to increase with bottom time in a given dive depth group. 40 and 50 fsw dive depth groups are not labeled but all model-estimated risks for these schedules are below 1.0% at the far left of the figure.

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APPENDIX G

MK16 MOD 1 1.3 ATA PO_2-IN-N_2 SINGLE AND REPETITIVE DIVE TABLES

Tables G-1 to G-3 are used to plan single and repetitive dives in precisely the same manner as the Standard Air Tables in the current U.S. Navy Diving Manual. The tables are designed for use with the MK 16 MOD 1 UBA with a PO_2 set point of 1.3 ATA and an air diluent. All bottom times include the descent time at the designated rate of 60 fsw/min.

Table G-1 gives the no-decompression limits and repetitive group designators for no-decompression dives to depths up to 190 fsw. To find the repetitive group designator for a dive, locate the row for the maximum depth of the dive in the left-most column. If there is no entry for the exact dive depth, use the row for the next deeper depth. Then move to the right in the row to the column with the appropriate bottom time (descent time + time on bottom). If the row does not have an entry equal to the exact bottom time, use the column with the next larger time. The repetitive group letter designator for the dive is obtained from the top entry in the column.

Table G-2 gives the decompression schedules and repetitive group designators for decompression dives. Schedules are grouped with solid line separators according to maximum dive depth. A limit line also appears within each group. Only schedules above the limit line in each dive depth group should be used in normal operations. Schedules below the limit line in each group should be used only with approval of the on-site commander. Repetitive dives below the limit line in each depth group are generally not permitted. However, in order to support repetitive dives after approved dives to depths greater than 150 fsw, surfacing repetive group designators are provided for selected schedules in the 160 – 190 fsw dive depth groups.

Table G-2 is used by locating the row for the intended maximum depth and bottom time for a dive. If exact table entries are not found, use the next deeper depth and the next longer bottom time. Required stops during the decompression are then listed in the columns to the right, with ascent time to first stop, total ascent time (ascent time + time at stops), and the surfacing repetitive group designator for the dive. Stop times are in minutes and, as per convention, do not include ascent times to the stops.

Table G-3 gives surface interval credits (top) and residual nitrogen times (bottom) for use in planning repetitive MK 16 MOD 1 N_2-O_2 dives after designated times at surface. All times in the body of the top Surface Interval Credit table show the elapsed time in ranges of hours and minutes after surfacing. All elapsed times were computed assuming air breathing at surface, but any N_2-O_2 mix with PO_2 in excess of 0.21 ATM may be breathed.

Table G-3 is used by locating the row in the Surface Interval Credit table for the surfacing repetitive group designator from the last completed dive, as obtained from

Table G-1 if the dive was a no-decompression dive, or from Table G-2 if the dive was a decompression dive. Then the column to the right along this row with entries for the actual or planned time at surface is found. The end-interval, or final, repetitive group designator is read from the bottom of this column. A column directly below this column in the Residual Nitrogen Time Table gives residual nitrogen times for this final repetitive group for MK 16 MOD 1 N_2-O_2 repetitive dives. In order to determine the residual nitrogen time for such a dive, locate the row in the latter table for the maximum depth of the planned repetitive dive. If there is no entry for the maximum dive depth, use the row for the next deeper depth. The entry along this row in the column for the end-interval or final repetitive group designator is the residual nitrogen time in minutes. This residual nitrogen time is added to the bottom time for the planned repetitive dive to obtain an equivalent single dive bottom time. The equivalent single dive bottom time and the planned maximum dive depth are then used to locate the appropriate decompression schedule and surfacing repetitive group designator for the repetitive dive in Table G-1 or G-2.

These repetitive dive procedures may be used with the U.S. Navy Standard Air Decompression Tables. The off-gassing rates at surface in the EL-MK 15/16 VVAL18 RTA are generally slower than those in the model used to compute the Standard Air Tables. Thus, the Surface Interval Credit portion of the present Table G-4 should be used to compute the end-interval or final repetitive group designator whether the starting group is a Standard Air group or a constant 1.3 ATA PO_2-in-N_2 group. For example, on completion of a Standard Air dive, the surfacing repetitive group from that dive as given by either the Standard Air Unlimited/No-Decompression and Repetitive Group Designation Table or the Standard Air Decompression Table should be used to enter Table G-3 and determine the residual nitrogen time for a planned MK 16 MOD 1 N_2-O_2 repetitive dive. Similarly, Table G-3 should be used to determine the final repetitive group designator after a MK 16 MOD 1 N_2-O_2 dive before a planned Standard Air repetitive dive. In this latter case, the resultant final repetitive group designator must be used with the Residual Nitrogen Time Table for Repetitive Air dives to determine the residual nitrogen time for the repetitive dive. (Do NOT use the Residual Nitrogen Time portion of Table G-3 to determine residual nitrogen times for Standard Air dives.) Using the equivalent single dive time obtained by adding the residual nitrogen time to the planned bottom time, the Standard Air Unlimited/No-Decompression and Repetitive Group Designation Table is then used to determine if the planned Standard Air repetitive dive exceeds the no-decompression limits. If it does, the decompression schedule and surfacing repetitive group designator for the dive is determined using the Standard Air Decompression Table.

A Repetitive Dive Worksheet for MK 16 MOD1 N_2-O_2 dives is provided to assist with these calculations.

TABLE G-1. No-Decompression Limits and Repetitive Group Designators for MK16 MOD 1 N_2-O_2 No-Decompression Dives

1.3 ATA FIXED PO_2 IN NITROGEN **RATES: DESCENT 60 FPM; ASCENT 30 FPM**

		REPETITIVE GROUP DESIGNATOR BOTTOM TIME (MIN)															
DEPTH (FSW)	NO-STOP LIMIT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Z
20	720	153	420	720													
30	720	31	50	72	98	128	164	210	273	372	629	720					
40	720	88	168	317	720												
50	720	27	44	63	84	108	136	169	210	265	344	496	720				
60	297	16	25	36	46	58	70	83	97	113	130	149	170	194	222	255	297
70	130	11	18	25	32	39	47	55	64	73	83	93	103	115	127	130	
80	70	9	14	19	24	30	36	42	48	54	61	68	70				
90	50	7	11	15	20	24	29	33	38	43	48	50					
100	39	6	9	13	16	20	24	28	32	36	39						
110	32	5	8	11	14	17	20	24	27	30	32						
120	27	4	7	9	12	15	18	20	23	26	27						
130	23	3	6	8	11	13	16	18	21	23							
140	21	3	5	7	9	12	14	16	18	21							
150	17	3	5	6	8	10	12	15	17								
limit line	----------																
160	15	3	4	6	8	9	11	13	15								
170	13	3	4	5	7	9	10	12	13								
180	12		3	5	6	8	9	11	12								
190	10		3	4	6	7	9	10									

Table G-2. Schedules and Repetitive Group Designators for MK16 MOD 1 N_2-O_2 Decompression Dives

1.3 ATA FIXED PO_2 IN NITROGEN **RATES: DESCENT 60 FPM; ASCENT 30 FPM**

DEPTH (FSW)	BTM TIM (M)	TM TO FIRST STOP (M:S)	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10	TOTAL ASCNT TIME (M:S)	RPT GRP DES (6)
			DECOMPRESSION STOPS (FSW) STOP TIMES (MIN)																
40	240	1:20														0	0	1:20	C
limit line																			
40	390	1:20														0	0	1:20	
50	240	1:40														0	0	1:40	I
limit line																			
50	390	1:40														0	0	1:40	
60	240	2:00														0	0	2:00	O
limit line																			
60	297	2:00														0	0	2:00	
60	300	1:20														1	0	3:00	
60	310	1:20														2	0	4:00	
60	320	1:20														3	0	5:00	
60	330	1:20														4	0	6:00	
60	340	1:20														5	0	7:00	
60	350	1:20														6	0	8:00	
60	360	1:20														7	0	9:00	
60	370	1:20														8	0	10:00	
60	380	1:20														9	0	11:00	
60	390	1:20														10	0	12:00	
70	130	2:20														0	0	2:20	O
70	140	1:40														3	0	5:20	O
70	150	1:40														6	0	8:20	O
70	160	1:40														8	0	10:20	Z
70	170	1:40														10	0	12:20	Z
70	180	1:40														12	0	14:20	Z
70	190	1:40														14	0	16:20	Z
70	200	1:40														16	0	18:20	Z

DEPTH (FSW)	BTM TIM (M)	TM TO FIRST STOP (M:S)	DECOMPRESSION STOPS (FSW) STOP TIMES (MIN)															TOTAL ASCNT TIME (M:S)	RPT GRP DES (6)
			150	140	130	120	110	100	90	80	70	60	50	40	30	20	10		
70	210	1:40														19	0	21:20	Z
70	220	1:40														22	0	24:20	Z
70	230	1:40														24	0	26:20	Z
70	240	1:40														26	0	28:20	Z
limit line																			
70	250	1:40														29	0	31:20	
70	260	1:40														31	0	33:20	
70	270	1:40														33	0	35:20	
70	280	1:40														35	0	37:20	
70	290	1:40														36	0	38:20	
70	300	1:40														38	0	40:20	
70	310	1:40														40	0	42:20	
70	320	1:40														42	0	44:20	
70	330	1:40														44	0	46:20	
70	340	1:40														46	0	48:20	
70	350	1:40														49	0	51:20	
80	70	2:40														0	0	2:40	L
80	75	2:00														2	0	4:40	L
80	80	2:00														3	0	5:40	M
80	85	2:00														5	0	7:40	M
80	90	2:00														6	0	8:40	N
80	95	2:00														7	0	9:40	N
80	100	2:00														8	0	10:40	N
80	110	2:00														12	0	14:40	O
80	120	2:00														16	0	18:40	O
80	130	2:00														20	0	22:40	Z
80	140	2:00														24	0	26:40	Z
80	150	2:00														27	0	29:40	Z
80	160	2:00														30	0	32:40	Z
80	170	2:00														34	0	36:40	Z

DEPTH (FSW)	BTM TIM (M)	TM TO FIRST STOP (M:S)	DECOMPRESSION STOPS (FSW) STOP TIMES (MIN) 150	140	130	120	110	100	90	80	70	60	50	40	30	20	10	TOTAL ASCNT TIME (M:S)	RPT GRP DES (6)
limit line																			
80	180	2:00														39	0	41:40	
80	190	2:00														43	0	45:40	
80	200	2:00														47	0	49:40	
80	210	2:00														50	0	52:40	
80	220	2:00														54	0	56:40	
80	230	2:00														57	0	59:40	
80	240	2:00														60	0	62:40	
80	250	2:00														63	0	65:40	
80	260	2:00														66	0	68:40	
80	270	2:00														70	0	72:40	
80	280	2:00														74	0	76:40	
80	290	2:00														77	0	79:40	
80	300	2:00														81	0	83:40	
80	310	2:00														84	0	86:40	
80	320	2:00														87	0	89:40	
90	50	3:00														0	0	3:00	K
90	55	2:20														3	0	6:00	K
90	60	2:20														6	0	9:00	L
90	65	2:20														8	0	11:00	L
90	70	2:20														10	0	13:00	M
90	75	2:20														13	0	16:00	M
90	80	2:20														14	0	17:00	N
90	85	2:20														16	0	19:00	N
90	90	2:20														18	0	21:00	O
90	95	2:20														21	0	24:00	O
90	100	2:20														24	0	27:00	O

DEPTH (FSW)	BTM TIM (M)	TM TO FIRST STOP (M:S)	DECOMPRESSION STOPS (FSW) STOP TIMES (MIN)															TOTAL ASCNT TIME (M:S)	RPT GRP DES (6)
			150	140	130	120	110	100	90	80	70	60	50	40	30	20	10		
90	110	2:20														30	0	33:00	O
90	120	2:20														35	0	38:00	Z
90	130	2:20														40	0	43:00	Z
limit line																			
90	140	2:20														45	0	48:00	
90	150	2:20														51	0	54:00	
90	160	2:20														57	0	60:00	
90	170	2:00													1	61	0	65:00	
90	180	2:00													2	65	0	70:00	
90	190	2:00													2	70	0	75:00	
100	39	3:20														0	0	3:20	J
100	40	2:40														1	0	4:20	J
100	45	2:40														5	0	8:20	K
100	50	2:40														9	0	12:20	L
100	55	2:40														12	0	15:20	L
100	60	2:40														15	0	18:20	M
100	65	2:40														18	0	21:20	M
100	70	2:40														21	0	24:20	N
100	75	2:40														23	0	26:20	N
100	80	2:40														26	0	29:20	O
100	85	2:40														30	0	33:20	O
100	90	2:40														34	0	37:20	O
limit line																			
100	95	2:20													1	37	0	41:20	
100	100	2:20													3	38	0	44:20	
100	110	2:20													6	42	0	51:20	
100	120	2:20													8	46	0	57:20	

DECOMPRESSION STOPS (FSW)
STOP TIMES (MIN)

DEPTH (FSW)	BTM TIM (M)	TM TO FIRST STOP (M:S)	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10	TOTAL ASCNT TIME (M:S)	RPT GRP DES (6)
110	32	3:40														0	0	3:40	J
110	35	3:00														3	0	6:40	J
110	40	3:00														8	0	11:40	K
110	45	3:00														13	0	16:40	L
110	50	3:00														17	0	20:40	L
110	55	3:00														21	0	24:40	M
110	60	3:00														25	0	28:40	M
110	65	3:00														28	0	31:40	N
limit line																			
110	70	2:40													1	30	0	34:40	
110	75	2:40													4	32	0	39:40	
110	80	2:40													7	34	0	44:40	
110	85	2:40													9	36	0	48:40	
110	90	2:40													11	39	0	53:40	
110	95	2:40													13	41	0	57:40	
110	100	2:40													15	43	0	61:40	
110	110	2:20												3	15	49	0	70:40	
110	120	2:20												6	15	56	0	80:40	
120	27	4:00														0	0	4:00	I
120	30	3:20														4	0	8:00	J
120	35	3:20														10	0	14:00	K
120	40	3:20														16	0	20:00	L
120	45	3:20														21	0	25:00	L
120	50	3:20														26	0	30:00	M
120	55	3:20														30	0	34:00	M
limit line																			
120	60	3:00													4	30	0	38:00	

DEPTH (FSW)	BTM TIM (M)	TM TO FIRST STOP (M:S)	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10	TOTAL ASCNT TIME (M:S)	RPT GRP DES (6)
			DECOMPRESSION STOPS (FSW) STOP TIMES (MIN)																
120	65	3:00													8	30	0	42:00	
120	70	3:00													12	32	0	48:00	
120	75	3:00													15	35	0	54:00	
120	80	2:40												3	15	37	0	59:00	
120	85	2:40												5	15	41	0	65:00	
120	90	2:40												8	15	43	0	70:00	
120	95	2:40												10	15	46	0	75:00	
120	100	2:40												12	15	50	0	81:00	
130	23	4:20														0	0	4:20	I
130	25	3:40														2	0	6:20	J
130	30	3:40														10	0	14:20	K
130	35	3:40														17	0	21:20	K
130	40	3:40														23	0	27:20	L
130	45	3:40														29	0	33:20	M
limit	line	----																	
130	50	3:20													4	30	0	38:20	
130	55	3:20													9	30	0	43:20	
130	60	3:20													14	29	0	47:20	
130	65	3:00												3	15	33	0	55:20	
130	70	3:00												7	15	36	0	62:20	
130	75	3:00												11	14	39	0	68:20	
130	80	3:00												14	14	42	0	74:20	
140	21	4:40														0	0	4:40	I
140	25	4:00														7	0	11:40	J
140	30	4:00														15	0	19:40	K
140	35	4:00														23	0	27:40	L

DEPTH (FSW)	BTM TIM (M)	TM TO FIRST STOP (M:S)	150	140	130	120	110	100	90	80	70	60	50	40	30	20	10	TOTAL ASCNT TIME (M:S)	RPT GRP DES (6)
			DECOMPRESSION STOPS (FSW) STOP TIMES (MIN)																
140	40	3:40													2	28	0	34:40	M
limit line																			
140	45	3:40													7	30	0	41:40	
140	50	3:20												1	12	29	0	46:40	
140	55	3:20												4	14	30	0	52:40	
140	60	3:20												9	14	33	0	60:40	
140	65	3:20												13	15	36	0	68:40	
140	70	3:00											3	14	15	39	0	75:40	
140	75	3:00											6	15	15	44	0	84:40	
140	80	3:00											10	15	14	50	0	93:40	
150	17	5:00														0	0	5:00	H
150	20	4:20														3	0	8:00	I
150	25	4:20														13	0	18:00	J
150	30	4:20														22	0	27:00	K
150	35	4:00													3	27	0	35:00	L
limit line																			
150	40	4:00													8	29	0	42:00	
150	45	3:40												3	12	29	0	49:00	
150	50	3:40												7	14	30	0	56:00	
150	55	3:20											2	10	15	33	0	65:00	
150	60	3:20											4	14	15	36	0	74:00	
150	70	3:20											13	14	15	46	0	93:00	
150	80	3:00										6	15	15	14	59	0	114:00	
limit line																			
160	15	5:20														0	0	5:20	H
160	20	4:40														7	0	12:20	J
160	25	4:20													1	17	0	23:20	K
160	30	4:20													3	24	0	32:20	L

DEPTH (FSW)	BTM TIM (M)	TM TO FIRST STOP (M:S)	DECOMPRESSION STOPS (FSW) STOP TIMES (MIN) 150	140	130	120	110	100	90	80	70	60	50	40	30	20	10	TOTAL ASCNT TIME (M:S)	RPT GRP DES (6)
160	35	4:00												1	7	28	0	41:20	
160	40	4:00												5	10	30	0	50:20	
160	45	3:40											2	7	14	29	0	57:20	
160	50	3:40											5	10	15	32	0	67:20	
160	55	3:20										1	7	13	15	36	0	77:20	
160	60	3:20										3	10	14	15	41	0	88:20	
160	80	3:00									2	15	15	14	15	68	0	134:20	
limit line ----------																			
170	13	5:40														0	0	5:40	H
170	15	5:00														2	0	7:40	I
170	20	5:00														11	0	16:40	J
170	25	4:40													3	20	0	28:40	K
170	30	4:20												2	6	25	0	38:40	
170	35	4:00											1	5	7	30	0	48:40	
170	40	4:00											3	8	11	30	0	57:40	
170	45	4:00											7	9	14	31	0	66:40	
170	50	3:40										4	7	12	15	36	0	79:40	
170	55	3:40										6	10	14	15	41	0	91:40	
170	60	3:20									2	7	13	15	14	49	0	105:40	
limit line ----------																			
180	12	6:00														0	0	6:00	H
180	15	5:20														4	0	10:00	I
180	20	5:00													2	14	0	22:00	K
180	25	4:40												3	3	22	0	34:00	L
180	30	4:20											2	3	7	27	0	45:00	
180	35	4:00										1	3	7	9	30	0	56:00	
180	40	4:00										2	7	7	14	30	0	66:00	

DEPTH (FSW)	BTM TIM (M)	TM TO FIRST STOP (M:S)	DECOMPRESSION STOPS (FSW) STOP TIMES (MIN) 150	140	130	120	110	100	90	80	70	60	50	40	30	20	10	TOTAL ASCNT TIME (M:S)	RPT GRP DES (6)
180	45	4:00										6	7	11	14	35	0	79:00	
180	50	3:40									2	7	8	15	14	40	0	92:00	
180	55	3:40									5	7	13	14	15	48	0	108:00	
180	60	3:20								1	7	9	14	15	15	56	0	123:00	
limit line																			
190	10	6:20														0	0	6:20	G
190	15	5:40														6	0	12:20	J
190	20	5:00												1	4	15	0	26:20	K
190	25	4:40											2	3	4	24	0	39:20	
190	30	4:20										1	4	5	7	28	0	51:20	
190	35	4:20										4	5	7	11	29	0	62:20	
190	40	4:00									2	5	7	8	15	34	0	77:20	
190	45	4:00									4	7	8	13	14	39	0	91:20	
190	50	3:40								1	7	7	10	15	15	47	0	108:20	
190	55	3:40								4	7	8	14	15	15	56	0	125:20	
190	60	3:40								7	7	12	15	14	15	65	0	141:20	

TABLE G-3. SURFACE INTERVAL CREDIT AND RESIDUAL NITROGEN TIME TABLE

All times in hour:minutes

START																
A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0:00
																2:20
B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	:00	1:17
															1:16	3:36
C	-	-	-	-	-	-	-	-	-	-	-	-	-	:00	:56	2:12
														:55	2:11	4:31
D	-	-	-	-	-	-	-	-	-	-	-	-	:00	:53	1:48	3:04
													:52	1:47	3:03	5:23
E	-	-	-	-	-	-	-	-	-	-	-	:00	:53	1:45	2:40	3:56
												:52	1:44	2:39	3:55	6:15
F	-	-	-	-	-	-	-	-	-	-	:00	:53	1:45	2:38	3:32	4:49
											:52	1:44	2:37	3:31	4:48	7:08
G	-	-	-	-	-	-	-	-	-	:00	:53	1:45	2:38	3:30	4:24	5:41
										:52	1:44	2:37	3:29	4:23	5:40	8:00
H	-	-	-	-	-	-	-	-	:00	:53	1:45	2:38	3:30	4:22	5:17	6:33
									:52	1:44	2:37	3:29	4:21	5:16	6:32	8:52
I	-	-	-	-	-	-	-	:00	:53	1:45	2:38	3:30	4:22	5:14	6:09	7:25
								:52	1:44	2:37	3:29	4:21	5:13	6:08	7:24	9:44
J	-	-	-	-	-	-	:00	:53	1:45	2:38	3:30	4:22	5:14	6:07	7:01	8:17
							:52	1:44	2:37	3:29	4:21	5:13	6:06	7:00	8:16	10:36
K	-	-	-	-	-	:00	:53	1:45	2:38	3:30	4:22	5:14	6:07	6:59	7:53	9:10
						:52	1:44	2:37	3:29	4:21	5:13	6:06	6:58	7:52	9:09	11:29
L	-	-	-	-	:00	:53	1:45	2:38	3:30	4:22	5:14	6:07	6:59	7:51	8:45	10:02
					:52	1:44	2:37	3:29	4:21	5:13	6:06	6:58	7:50	8:44	10:01	12:21
M	-	-	-	:00	:53	1:45	2:38	3:30	4:22	5:14	6:07	6:59	7:51	8:43	9:38	10:54
				:52	1:44	2:37	3:29	4:21	5:13	6:06	6:58	7:50	8:42	9:37	10:53	13:13
N	-	-	:00	:53	1:45	2:38	3:30	4:22	5:14	6:07	6:59	7:51	8:43	9:35	10:30	11:46
			:52	1:44	2:37	3:29	4:21	5:13	6:06	6:58	7:50	8:42	9:34	10:29	11:45	14:05
O	-	:00	:53	1:45	2:38	3:30	4:22	5:14	6:07	6:59	7:51	8:43	9:35	10:28	11:22	12:37
		:52	1:44	2:37	3:29	4:21	5:13	6:06	6:58	7:50	8:42	9:34	10:27	11:21	12:37	14:58
Z	:00	:53	1:45	2:38	3:30	4:22	5:14	6:07	6:59	7:51	8:43	9:35	10:28	11:20	12:14	13:31
	:52	1:44	2:37	3:29	4:21	5:13	6:06	6:58	7:50	8:42	9:34	10:27	11:19	12:13	13:30	15:50
FINAL	Z	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A

RESIDUAL NITROGEN TIME (MIN) FOR REPETITIVE MK 16 MOD 1 N_2-O_2 DIVE

DEPTH (FSW)																
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	720
20	-	-	-	-	-	-	-	-	-	-	-	-	-	720	420	153
30	-	-	-	-	-	720	629	372	273	210	164	128	98	72	50	31
40	-	-	-	-	-	-	-	-	-	-	-	-	720	317	168	88
50	-	-	-	-	720	496	344	265	210	169	136	108	84	63	44	27
60	297	255	222	194	170	149	130	113	97	83	70	58	46	36	25	16
70	154	140	127	115	103	93	83	73	64	55	47	39	32	25	18	11
80	107	98	90	82	75	68	61	54	48	42	36	30	24	19	14	9
90	82	76	70	64	59	53	48	43	38	33	29	24	20	15	11	7
100	67	62	57	53	48	44	40	36	32	28	24	20	16	13	9	6
110	56	52	48	45	41	37	34	30	27	24	20	17	14	11	8	5
120	49	45	42	39	35	32	29	26	23	20	18	15	12	9	7	4
130	43	40	37	34	31	29	26	23	21	18	16	13	11	8	6	3
140	38	35	33	30	28	26	23	21	18	16	14	12	9	7	5	3
150	34	32	30	27	25	23	21	19	17	15	12	10	8	6	5	3
160	31	29	27	25	23	21	19	17	15	13	11	9	8	6	4	3
170	28	27	25	23	21	19	17	16	14	12	10	9	7	5	4	3
180	26	24	23	21	19	18	16	14	13	11	9	8	6	5	3	3
190	24	23	21	19	18	16	15	13	12	10	9	7	6	4	3	3

REPETITIVE DIVE WORKSHEET
FOR
MK 16 MOD 1 N_2-O_2 DIVES

Part 1 Previous Dive:

____________ minutes

____________ feet

____________ repetitive group designator from Table G-1 if the dive was a no-decompression dive, or from Table G-2 if the dive was a decompression dive

Part 2. Surface Interval:

Enter the top section of Table G-3 at the row for the repetitive group designator from Part 1 and move horizontally to the column in which the actual or planned surface interval time lies. Read the final repetitive group designator from the bottom of this column.

________ hours ______ minutes on the surface

________ final repetitive group from Table G-3

Part 3. Equivalent Single Dive Time for the Repetitive Dive:

Enter the bottom section of Table G-3 at the row for the maximum depth of the planned repetitive dive. Move horizontally to the column of the final repetitive group designator from Part 2 to find the Residual Nitrogen Time (RNT). Add this RNT to the planned bottom time for the repetitive dive to obtain the equivalent single dive time.

_____ minutes: RNT

+_____ minutes: planned bottom time

=_____ minutes: equivalent single dive time

Part 4. Decompression Schedule for the Repetitive Dive:

Locate the row for the depth of the planned repetitive dive in Table G-1. Move horizontally to the column with bottom time equal to or just greater than the equivalent single dive time and read the surfacing repetitive group for the repetitive dive from the top of the column. If the equivalent single dive time exceeds the no-decompression limit, locate the row for the depth and equivalent single dive time in Table G-2. Read the required decompression stops and surfacing repetitive group from the columns to the right along this row.

_____ minutes: equivalent single dive time from Part 3

_____ feet: depth of the repetitive dive.

_____ Schedule (depth/bottom time) from Table G-2, if a decompression dive:

Stops (fsw):	80	70	60	50	40	30	20	10
Stop Times (min):	___	___	___	___	___	___	___	___